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NEWS IN BRIEF

Underwriters switch

THE Institute of London Underwriters has rejected ICL's DME/System 4 on 2960 as a replacement for its seven-year-old ICL System 4/50, in favour of splitting its workload between a Univac 90/30 for batch processing and three Honeywell Level 6 minis for data entry.

Going it alone

GLASGOW District Council has cut its data processing ties with the Strathclyde Regional Council, and is to establish its own computer services department by installing two Honeywell Level 6 systems. The machines, a Level 66/DPS-14 and Level 66/20, will be delivered next year.

IDPM elections

NOMINATIONS and motions for the annual meeting of the Institute of Data Processing Management should be submitted to the Secretary-General at 12 Henrietta Street, London, WC2E 8NU by 5.00 pm, Wednesday, July 18. The meeting is to be held at the Royal Horseguards Hotel, near Charing Cross Station, on Thursday, July 26 at 4.30 for 5.00 pm.

Memorex link-up

XEROX Sigma 8 mainframes at the Comshare bureau in London are to be interfaced with £500,000 worth of 200 Megabyte Memorex 3675 disc drives using a special interface called the Channel developed by Comshare itself.

Products launched in time for WP Fair

COINCIDING with the Word Processing Exhibition at Wembley this week, a spate of new products have been announced by both hardware and software suppliers, including a small-scale shared logic system from AES Wordplex and WP software from Altergo for the IBM System/34.

In an effort to increase the appeal of its ink-jet printer, IBM has introduced a new high-speed version that can print 184 characters a second, at double the normal speed, with reduced character quality. The usual 92 characters a second can also be selected. Seven different typescripts are available instead of the five hitherto.

The Dual Speed Document Printer, as it is called, costs £18,138, but existing units can be upgraded in the field for £2,202.

The new Wordplex 4 can support up to six screen typing stations and four printers, and is intended to fit in between the Wordplex 7 shared-logic system and the 1.3 three-station cluster. At a price of £46,450 it is being launched by AES Wordplex under the slogan "simple shared logic". There are 32 Mbytes of document storage, half of it on a fixed disc and half on a removable cartridge.

Altergo's WP software for the IBM System/34 small business system is called Wordpower and was developed by Professional Computer Resources of Illinois. It concentrates on facilities for assembling documents from standard paragraphs, and producing mail shots by merging a letter with a list of names and addresses.

Later this year Digital Equipment will be expanding the top end of its word processing range by launching in the UK a software package for PDP-11 systems called WPSII. Using this, a PDP-11 70 can support up to 16 WTTs word processing terminals. Communications and document storage on a large scale will be its main features. The company sees word processing moving towards being combined with data processing, and the WPSII is a step in that direction.

Jacquard UK will be launching the 3500 stand-alone system at the Wembley fair. This provides simultaneous word and data processing and communications with increased power compared to earlier Jacquard models.

Battle over cash cuts at Brunel

CUTBACKS in student numbers brought about by cash limits and new controls from the University Grants Committee have led to bitter battles over enrolment at Brunel University's Computer Science Department.

Rebellious teaching staff, instructed to cut their intake from 50 students to 40 for next year, resolved to press ahead with teaching underfunded numbers, and have been threatened with yet further cuts in funds.

These difficulties, which are affecting universities across the country, are likely to be aggravated by economies still to be introduced following the new government's Budget, but the effects of these are as yet not determined.

UGC grants have not been keeping up with inflation, and to prevent universities "eating their own flesh" by stopping spending on capital and

research while taking more students, the Committee has imposed limits on student numbers instead of on funds. If any students are accepted over the specified number, the grant is reduced by the amount of fee income the university will receive from each extra student.

The overall effect on Brunel is that it must cut rolls by 100 from 2,400 and this leads to a 20% reduction in the intake for next year. All departments are equally determined not to have their numbers reduced, and the sharing out of the cuts has been the subject of much strife in the Senate.

This particularly exasperated the Brunel lecturers who knew that, with the current shortage of trained computer people, there were 12 jobs waiting for each of their graduates. They therefore decided to accept 50 students while having funds for only 40, and they were then told that if they could manage on 20% less money, their allocation should be cut by a further 20% on the basis that they should have only 40 students.

It now appears that next term the final number of students will be 62.

Bob Parslow, who is shortly to become head of the department, suggested that it was ridiculous in the current economic plight to cut training in areas vital to the economy.

He pointed out that UCCA applications for computer courses are up 55% this year, and said it was tempting to think that both governments were trying to kill the universities, but it was more likely they were simply trying to deal with short-term problems without considering the future.

"In two years' time," Parslow said, "everyone will be screaming 'where are our computers' while the effect of these cuts won't be seen for three years."

Ansi committee set up to develop graphics language

THE American National Standards Institute has approved the formation of a new committee to develop a standard computer graphics programming language (CGPL).

To be called X3H3, the committee is being convened by Dr Peter Bono and will hold its inaugural meeting from September 19-21 at the headquarters of CBEMA, in Washington. Dr Bono, of the Naval Underwater Systems Centre, New London, has been extensively involved in US and international graphics activities since 1974.

Among the first objectives of the work will be the definition of two and three dimensional output primitives, viewing transformations, and interaction.

The CGPL effort brings to three the number of completely new standards being developed in the US.

Early last year, the Comshare committee dedicated to creating a Common Operating System Command Language (COSCL) met for the first time (CW, March 23, 1978) while Anal in the autumn launched a committee for the purpose of defining a standard text processing language (CW, August 24, 1978).

According to Sausan, the decision whether to appoint Personal Computer as a sub-distributor in the UK was left by Sausan to his brother, managing director Data Efficiency. Brewer decided against this route.

According to Sausan, the change in UK marketing was prompted by a letter from Personal Computers managing director, Mike Sterland dated last

PROMPTED by requests from its user group, Systime has set up a software marketing group to sell a variety of RSTS-hosted application system software packages, including a communications facility called SYS-net.

The group, headed by Judy Jurak, will be supplying PDP-11 users in general as well as Systime's own user base. The latter asked the company to promote its software more actively, as they were unaware of the full range of Systime packages available.

Among the application software to be marketed is the financial modelling system Finar, the word-processing Word-11, and programs for such applications as order entry, payroll, and financial accounting.

A NEW division, Plessey Defence Systems Ltd, has been set up within Plessey Electronic Systems to concentrate its efforts in exporting equipment developed under Project Plarman and other products aimed at the world communications, command and control market thought to be worth £2,000 million over the next 10 years in NATO alone. The new managing director, Bob Paterson, comes from Plessey Telecommunications Systems, where he was also responsible for Plarman.

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Apple chief confirms UK agent

THE chief of Apple Computer dealers in the UK has confirmed the appointment of a new UK agent.

Apple Computer Inc. has appointed a new UK agent to handle its products in the UK.

The new agent will be responsible for the sale and distribution of Apple products in the UK.

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Briefing BCS grading changes plan

THE Council of the British Computer Society is to consider next week the report of the task force on membership (CW, October 12, 1978) which among other things recommends that the Society's grading structure be simplified and that the activities of branches and specialist groups be widened and brought into contact with employers, colleges, and other professional bodies.

Under the proposals, the grade of Licentiate would be abolished and more people would be encouraged to take up membership through exemption from the Society's exams.

303X line boost

A MID-LIFE boost for the IBM 303X line, in the shape of a stripped down 3033 offering 50% better performance than the 3032 at the same price, is forecast by Aharon Orlansky, analyst with Dean Witter Reynolds in Paris.

NEB's future

NEB's Insc, Imnos and Nexos ventures should survive, but the board's plan to float a national computer and electronics company (CW, June 28) looks doomed and the sale of at least part of the NEB's 25% of ICL and 50% of Ferranti is now a certainty.

Prestel and a pint

COIN-OPERATED Prestel receivers are now installed in four London locations — an hotel lobby, a department store, a tourist office and a pub — and owner-operators Cherry Leisure report that usage is much the heaviest in the pub. Meanwhile the Post Office plans to make Prestel accessible from 80% of the nation's telephones by next summer — Details, page 5.

ICL additions

TWO new versions of its 1900 numerical control system NELAPT have been released by ICL: NELAPT 20 for small 2903/4 users and NELAPT 40 for large and medium 2900 DME installations.

Anti-trust move

WHEN the decade-old anti-trust suit brought by the Justice Department resumed in New York today, July 19, IBM is expected either to halt its defence, seek a quick verdict and then appeal, or appeal Judge Edelstein's ruling that it must produce further documents necessitating a \$5,000 million page search.

Micro association

REPRESENTATIVES of 22 microcomputer firms, mostly retailers are to set up a trade association, either for retailers or for the whole UK micro industry. They plan an inaugural meeting in September. Details from Heather Hodgson, 47 Creswell Road, Newbury, Berks.

Redifon and CMC-Europe in £50m merger

A FORMIDABLE new British-owned computer group with a turnover throughout Europe of some £50 million has been formed by Redifusion, the parent company of Redifon Computers.

Redifusion is buying CMC-Europe, which owns CMC-France, CMC-Germany and nine other operating companies spanning continental Europe, for £4.25 million. CMC-Europe is to be renamed Redifon Computer Machinery Corp, RCMC, and the two companies will shortly lay plans for a five-year

programme of product convergence. Both companies specialise in key-to-disc systems. Geographically, the match is ideal. Redifon Computers markets in the UK, Eastern Europe and the Middle East, while CMC-Europe covers most of continental Europe (a market where Redifon is not represented, because its original products were licensed from Entrex in the US, and Nixdorf had the Entrex licence for the Continent).

CMC-Europe does supply some products to CMC-UK, which is owned by US minimaker Microdata, but this business has been dwindling as CMC-UK concentrated on Microdata Reality systems.

The new group has factories in the UK and France. In the UK, Redifon builds its own 16-bit minis, displays and keyboards and does system integration. In France, CMC-Europe does a similar level of manufacturing, although it buys its processors OEM, mainly from Digital Equipment. It has just introduced a powerful new system, the 7800 (see page 18).

Initially, rationalisation talks are likely to concentrate on joint research and development, joint purchasing of peripherals, and products like displays and keyboards which could be common to the products of each company.

Redifon Computers' turnover for its last financial year which closed in March has not been published, but was close to £20 million; it employs 700 people. CMC-Europe has between 700 and 800 employees and had a

● Turn to page 2

ICL clears the way to 2900

By Peter Hewitt

MAJOR new facilities which ease the way for ICL users from 1800 to 2900 series systems are being introduced by the company. They include the coupling of 1800 and 2900 systems under a single filestore and the ability to run job control statements from the 2900 VME/B operating system on 1900 series machines.

The shared filestore facility, which allows two machines to be operated as one, involves extensive modifications to the 1900 series George 3 operating system. But throughput can be faster than for two free-standing machines because tasks like dumping, high-level scheduling and disc file opening and closing are handled by one machine only. And if one of the two processors is a 2900 running under DME, time not taken up by off-loaded 1900 jobs can be dedicated to running VME/B applications or conversion jobs.

One processor, the "slave", is loaded with a cut-down version of the operating system. The link with the other, the "master" processor, is established via a

simple command from the master's console. Subsequently any work may be assigned by the operator to either machine.

Should the master processor go down, the system can be reconfigured by loading the full operating system on to the slave. If the slave fails, the master continues to operate as a free-standing machine.

At the more typical of the first two user sites, the Leyland Unipart Data Centre at Oxford, the combined effect of greater usability — seen by ICL and customers as the main benefit — and the reduction in overhead is estimated to give an overall throughput improvement of between 10% and 30% over two separate machines.

Shared filestore carries a once-off charge of £30,000, and the necessary inter-processor buffer costs about £10,000. There is also a maintenance charge attached to the software to provide for necessary modifications under future releases of George. ICL's work on retro-fitting

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US bank sues Lloyd's for \$10m

FOLLOWING the \$830 million writ served on Lloyd's underwriters last month by Federal Leasing of Virginia (CW, June 28), 55 underwriting syndicates are now being sued for \$10 million punitive damages by a Chicago bank, the Bank of Lincolnwood.

The Chicago bank's suit is closely linked with the Federal suit because Federal used the "J" policies it took out with Lloyd's as collateral for the loans that it arranged with Lincolnwood. The latter is also suing Federal seeking to recover \$800,000. Another defendant is the First National Bank of Boston.

Computer Weekly's Inside News

EASTERN PROMISE

Computer Weekly International highlights the Third World, with news reports from India and a feature on Bulgaria which shows how the Eastern European countries are being brought even closer together through the development of computers. In addition, Fred Lamond gives a country-by-country run down on the political — external and internal — of electronics. Pages 17-24

ALSO

Computervision on a micro-processor. Focus behind closed doors. Downtime by Chad.

FACTORIES IN SPACE

The big boys, IBM and ICL, were out in force at last week's word

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Racal into automated office market

A SMALL but innovative company in Hove is to form the core of Racal Electronics' challenge for a share of the automated office market.

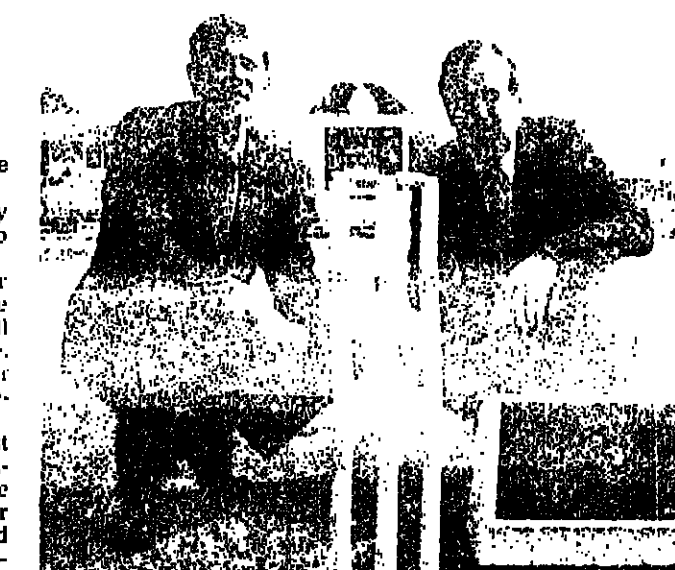
As forecast in Computer Weekly (December 14, 1978), Racal has formed a new company, Racal Information Systems Ltd, within the Data Communications Group, and as a first step has acquired 85% of Hyperon Consulting Engineers of Hove for about £250,000.

Using the Intel 8080 microprocessor, Hyperon has developed a range of microcomputer modules which are used in intelligent terminals, word processors and business microcomputers, using an approach strikingly similar to that adopted by Wang for its successful range of word processors.

Now renamed Racal-Hyperon, the company has a range of modules which include a standard processor board, memory board, channel board and disc controller, which can be assembled in almost unlimited multi-microprocessor configurations. These, as with Wang, distribute the intelligence throughout the system.

The company has seven years' experience with microprocessors, having started with the Intel 4004 in 1972. Software includes a multi-task, multi-user operating system and a file management system. Products which have been developed and are available include a word processor, a dental

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Test for the Level 6

EAGLE-EYED televisioners glued to their sets at the First Test with India at Edgbaston turned into a feast of run-getting, will have spotted a familiar but surprising name up there among the Gowars, Bothams and Venkatraghavan. Honeywell was the name.

It was Ted Dexter's idea that in this scientific age, the acknowledged inadequacy of Brian Johnston's arithmetic should be machine assisted, and as a result, a Honeywell Level 6/33 minicomputer was programmed with the accumulated statistics of generations of willow-on-leather encounters. A VDU in the commentary box puts up a split-screen display, one half going out on the TV screen, the other providing additional information for the commentators' eyes alone.

Our picture shows Ted Dexter (right) with Honeywell director David Crofts, sullying the virgin turf of Edgbaston with their machinery prior to the start of the match last Thursday.

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COMPUTERVIEW

FOR a slowly growing number of companies in the microcomputer business the hard realities of the market are being learned the hard way.

Take, for example, the situation that arose some three weeks ago between Eurapple, the European marketing arm of Apple Computers in Cupertino, California, Personal Computers, and Data Efficiency. Personal Computers was the company that, some 18 months ago, started operations by being the first to sell the then new Apple II microcomputer into the UK. Since that time there has been a steady growth in sales from around three systems a month to 100 a month. Now, the ground has at face value been literally whipped from under them by Eurapple, which has made Data Efficiency master distributor for Apple products in the UK.

Does this mean that Eurapple is a bunch of nasty ex-colonialists bent on subverting British industry? The change in marketing outlet was sudden, that is certainly true, and it could easily be argued that Eurapple should have directly informed its existing distributors (which included Keen Computers and Lynx Computers as well as Personal Computers), rather than have it come out of the blue at them from Data Efficiency.

After all (and this is in no way meant to cast any shadow of doubt on Data Efficiency) all anyone had was their word for their appointment to begin with. But in the end it was not true that the Americans were nasty. Unhappy, probably — not the British way — almost certainly, but for Americans it was just the way that they naturally operate. To go back into recent history for a while, some of the stages

A lesson not too late for the learning

that led up to the change in Apple distribution in the UK provide something of an object lesson in trans-Atlantic business dealing, and also in trans-Atlantic misunderstandings.

At least from the beginning of this year, Personal Computers had suffered from a poor supply of spare parts and the important PAL cards for the Apple, and this was the subject of several Telexes between the company and Eurapple. It was also hit hard by the Customs strike, which held up some shipments, but not others, so making sensible stock control almost impossible. This also compounded difficulties by loading often punitive warehousing charges on to the products because they could not be cleared through Customs. After five days, the going rate becomes £2 per kilo per day.

On top of this came the appointment of Keen Computers as a distributor by Eurapple. Keen had previously been a Personal Computers dealer, but the supply problems had prompted the change in

status. In a letter dated May 4, Andre Soussan, president of Eurapple wrote to Personal Computers managing director, Mike Sterland to clarify the position of Keen in the UK, saying that it was a distributor for the Midlands only, and that no further distributor appointments would be made in the UK. He hoped that this would give the clarification asked for.

On June 15, Sterland sent a Telex to Eurapple, complaining once again that the lack of PAL cards and spares was affecting his business opportunities — there were, for example, £40,000 worth of Apples at Personal Computers that had been cannibalised to get spares for existing customers. Sterland went on to say that he was giving serious consideration to dropping his dealer network over a period, and might possibly take on another competing product line. This was taken by Eurapple as a non-acceptance of the clarification offered and that Personal Computers no longer wanted to distribute Apples.

The situation resolves down to one where Eurapple felt obliged to change its UK distributor set-up following what it viewed as a "bailing-out" by Personal Computers. In their terms this was not an unsound move. On the other hand, Personal Computers felt they only hinted that they might bail out if they did not get the increased support they felt they needed — a logical tactic to try and stir up some action.

Unfortunately in this particular game, Eurapple held all the aces.

The lesson for anybody looking at the microcomputer business is that it is fun, stimulating, demanding, maybe even chic. But at the same time it is a jungle where your financial jugular vein stands out a mile and everyone is a potential Dracula. When companies like Apple have corporate growth targets that are very close to 20% compound per month, no-one gets taken prisoner — it is shoot on sight.

Back in March, Dr Robert Clayton, chairman of GEC-Fairchild, bemoaned the fact that UK education could not produce people with that mixture of entrepreneurialism, technical expertise and corporate management skill that had developed in the US.

In the microcomputer business, where it is all money-in-front, and credit is often only in exchange for the deeds of a house, all these attributes are needed with a vengeance. On top of this is the need to know the psychology of the supplier, and preferably (the best defence possible) what he thinks before he thinks it. For he will as sure, no one in this game is really going to have a genuinely friendly business relationship. At the end of the day it is only a business business relationship.

MARTIN BANKS

Ten years ago...

COMPUTER WEEKLY
JULY 17, 1969

IBM introduced its new mainframe language for systems programming, MinTech, estimated that in 1971 there would be over 7,000 computers in the UK, the Common Pleas planned an early trial in processing and found a company, STD, the Standard Data Transmission.

Redifon/CN merger

From front page turnover of £30 million in on which it made a profit of £1.2 million; for the year it is forecasting a 18% at £1.4 million on a 19% at £35 million. Half the turnover, £18.2, was generated in France; but a substantial proportion of this was transferred to other companies in the CMC-Europe was from the US Corp. Machinery Corp in 1970 consortium of Swedish Dutch financial interests; subsequently CMC-UK was a subsidiary of the latter in a bid to obtain control of the company. Redifusion's agreement with the Dutch registered company for CMC-Europe NV. Subsequent European disposal, the former parent company acquired by Perlec.

Behind closed doors

UNTIL now, the computer industry has happily remained free from the meddling hand of central controls, whether from regulatory bodies or government institutions. Free enterprise has flourished at all levels — even if the computing enterprise seldom comes free or even gift-wrapped.

It could be, however, that behind the DP scenes the industry is being manipulated by unknown groups. The suggestion that such pressure groups operate comes from David Butler, an influential UK consultant who is seeking to convince us all that "the prevailing opinion in the computer environment is formed by an amazingly small number of people, possibly as few as 20 or 30".

Unfortunately, Butler does not identify the participants of this seemingly reticent group, except to suggest that they operate from behind closed doors. However, specifically ruled out are such industry bodies as the NCC and CSA.

It will, we hope, take more than the opinion of one consultant to convince the industry that it is being manipulated. Power in the computing industry is more broadly based than on the opinion of the quoted 20 or so individuals. It rests firmly in the hands of those closely (and visibly) involved in the world of computers.

For a start, it is the decisions of DP managers which are responsible for shaping much of the DP action. It is the DPM's opinion which is taken on such matters as moving into teleprocessing, or whether to enhance or replace existing systems — and not that of some

anonymous body of opinion. The installation team likewise exercises a powerful role in the industry. The pace of technological change largely depends on the supply and competence of DP personnel. Closed doors are not encouraged, even if there was time to close them.

The company also plays an important part. It is, after all, supplying the money which supports the opinions of the DP management. Doors in this area are normally left wide open in order to monitor progress both inside and outside their in-house operation.

Power in DP is very much centred in the marketplace. It is here that opinions are formed. Whether it is in the shape of the mind-blowing sales from BASF or the keenness of the manufacturer's field engineering force, power and opinions are seldom far from the scene of action.

While governments and industry bodies discuss such momentous matters as computer privacy, microchip support and Prestel licensing fees, suppliers are busy promoting ever faster and more random disc sub-systems, communication devices and packaged software.

While IBM is challenging the world, it is itself fighting off the PCM might of such aggressive organisations as Storage Technology and Intel. The industry has no need for closed door policies or manipulators. Advocates of a select group of policy-makers should try opening a few installation doors. They could well encounter a strange world — one where computer power-sharing is notably widespread.

1984 and all that...
THIS week's example of the strange things people say in the media about computers was sent in by Michael Coon, of Leasco, who wins £5.
In Washington DC, a cunning manipulator opened a bank account with a few thousand dollars and then appropriated a pile of pay-in slips supplied for the convenience of customers. The next move was to use a magnetic "in-character recognition system" to print the number of his own account on them.

Sunday Telegraph

Wilkes

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GILB'S MYTHODOLOGY

Towards clearer analysis of a design specification



THE tool discussed in this column, the Quota/Control Table (Q/C), is a quantified extension of the Function/Attribute Table which we showed in our last column (CW, July 5). I shall illustrate it by continuing to use the example of a specialised maintainability design which was used in the two previous columns. If you don't have these two columns handy, I hope the example will speak for itself.

In any system design process, even a fairly small-scale one, a large number of decisions must be made to give us the system attributes we want. In many design situations we can afford to use an "overkill" method. We simply overdo the qualities, and can afford the cost and the time to do so. In other situations we try to make a reasonable job of it, based on previous experience. If the initial system does not perform the way we want it to, we patch the design by adding or altering features until we are satisfied.

In some systems neither of these simple approaches is satisfactory. We must try to get it right the first time, and we cannot afford any more time or money than necessary to do so. In these cases a higher degree of planning effort is the cheapest alternative and the one that takes the least project time.

The Quota/Control Table is simply a format for stating in writing the opinion of the designer on the approximate effect which his/her design decisions are expected to have. If they have no effect, there is no reason to make them at all. So presumably the designer has some knowledge of the effect of a design decision, and should be required to state an opinion — including the degree of uncertainty of the decision.

The Q/C table does not only capture the immediate opinion of the designer. It also allows a cumulative picture to emerge of the progress towards the design goals. It allows an estimate of the certainty, and thus uncertainty, of the achievement of these goals; the risk of success is estimable. And finally, it eases the communication of the designer's opinions to design review committees, which are gaining tremendously in importance as the lessons of IBM's Inspection method become more well-known (this will be the subject of a forthcoming column).

The illustration accompanying this column describes the Q/C table in a nutshell. I have used the system attribute specifications (left-hand vertical column of the table) from my recent column (CW, June 21)

and used the suggested design decisions proposed in the column which followed.

Next, here in the Q/C table, I have made a designer's personal estimate of the degree to which the planned level (restated in parentheses beside each objective, at the left) will be fulfilled.

Whenever I have been in doubt as to the degree of effect which a design suggestion will have, then I have indicated this approximately with a plus/minus deviation. These deviations are expressed in the same "currency" as the percentages and can be cumulated. Estimates of 20% ± 5, 10% ± 15 add up to 30% ± 20 and —5, or in other numbers indicates that the planned level of that attribute is about 30% fulfilled. But, in the worst case maybe only 25% (30% - 5%), and in the best case maybe as much as 50% (30% + 20%) is fulfilled.

The numbers are only as good as the person stating them but the alternative is unpleasant to contemplate: vague meanings, less words and assertions which cannot be communicated to others and are not subject to any kind of quality control.

Even when the numbers estimated are unreasonably incorrect by any standards, they can be subjected to independent inspection by professional colleagues. And even when these colleagues accept meaningless numbers, as they will on occasion, they will have to accept responsibility for their inadequate audit of the design decision. They will have to admit that the assertions of design effectiveness were communicated clearly to them.

I do not expect the majority of readers to rush out and make extensive use of this technique. Their environment will not permit or encourage it even if they are able and willing. But the possibility of such clear analysis of a design specification is now there, on the public table. The possibility of a systems engineering approach exists when we are mature and motivated.

You can partake of the feast when you are hungry.

Do-it-yourself database kit

A DO-IT-YOURSELF database kit, which guides a planner through the phases of database design, updating, and reporting, has been added by Boeing Computer Centres to its planning and modelling system EIS (Software File, May 18, 1978).

Called Ezdata, the new facility is one of 40 new functions added to the service, which has also been enhanced with new economic databases covering, for example, consumer price indices and gross national product figures.

Puzzler

TONY CIMA, of the Mercantile and General data processing department in Cheltenham, contributes the following data problem for readers' mystification: A top-class player gets 301 with only six darts, starting and finishing on a double, and scoring in a different area of the board with each throw. Where did the six darts land exactly? See page 63 for solution.

Design specification-code

Objective area (planned level)	Full database audit program 1% DBA	Local software logic module tests M 2FG	System test 1% ST	Final acceptance test 1% FAT	All other minor specifications RLP, RC, LST, TXT, TEL, LIB	Inspection MINS
Problem recognition (60 mins)	80 %	10 %	5 %	0 %	?	0 %
Administrative delay (60 mins)	0	95% (bugs if online replacement)	0	0	50% (bell)	0
Tool and document collection (10 mins)					90% (M LIB)	
Problem analysis (5 to 10 mins)	30 %	30 %	20 %	15 %	5 %	5 %
Change specification (5 mins ?)	0	0	0	50 %	10 %	20 %
Active correction (15 to 30 mins)	0	95% if online bug correction	-10 %	80 %	10-30 %	-20 %
Local correctness test (5 mins)	10 %	30 %	30 %	20 %	5 %	30 %
Global side-effect test (100% act. corr)	80 %	5 %	15 %	5 %	0 %	5-25 %
Independent change audit (some day)	50 %	4 %	5 %	0 %	1 %	40 %
Recovery from effect of problem (2 hours)	0	0	0	0	0	0

Quota/Control Table: An example from a maintainability design.

PROGRAMMER NOTES

Value of an 'editor' in the development process

MANY who speak and write on software practice acknowledge that reading other people's programs is one of the best ways of furthering one's understanding of programming and its problems.

And in recent years, there has been increasing emphasis on the use of inspection to improve software quality, both at the design and at the coding stage. Structured walk throughs and code reviews have many advocates and are practised in many different ways in different places, with varying regularity and thoroughness. However, when properly conducted, they impose an overhead in time and effort which is not inconsiderable.

As with many DP "discoveries", however, these techniques are far from being wholly new, consisting in essence of the systematisation of long-established practices.

It has always been common for programmers and designers to ask colleagues to check their work. As well as turning up errors, such collaboration is an ideal opportunity for the exchange of ideas.

There is plenty of scope, therefore, for extending informal and irregular consultations into something more formal, while stopping short of full-blown project team inspection meetings.

One possible half-way house could be the incorporation of an "editing" step into the development process.

Much in the same way that a draft document is edited before publication, programs could be

checked for intelligibility, continuity, and style by a "program editor".

His responsibilities could extend to the incorporation of revisions and would certainly include verifying that documentation was adequate. Indeed, the feasibility of any program editing would depend on adequate documentation being available.

The completion of the editing step would be a prerequisite for acceptance of the program into

the live inventory and, hopefully, ease the programming, by making unintelligible programs not accepted for operation.

Programmers should for the discussion of technical matters to programming. If applications or systems manager and have views on any other aspect of programming, please write to Peter Notes, Computer Weekly House, Stamford Road, SE1 8LU.

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For bookings please telephone 061-228 6333 (Joan Selth) or send name of delegate and cheque for £83.95 including VAT (NCC Members £50) to: Joan Selth (S13) The National Computing Centre, Oxford Road Manchester M1 7PL.

NCC seminar

The National Computing Centre

SOFTWARE FILE

CA links up with HPAC compilers

SOLVING at a stroke the need to provide specifically European languages on its systems, Computer Automation has entered into an unusual marketing agreement with HPAC, of Oxford, giving it rights to sell the entire range of HPAC compilers on the Naked Mini LSI-2 and LSI-4.

Likely to be of most relevance is the immediate future of HPAC's implementation of Coral and RTL/2. CA has also noted a remarkably high level of interest in BCPL which HPAC uses to implement all its compilers and fully supports as a product in its own right.

Both the Coral and BCPL compilers are already available as in HPAC's Fortran 77 compiler, first announced last year (Software File, November 30, 1978). The RTL/2 compiler is due to be released shortly.

HPAC is also working on implementations of Algol 60 and Basic. In the longer term it plans to produce Pascal and Cobol compilers as well as a Mascot system to support Coral applications.

CA's agreement with HPAC is worldwide. It is likely though to be applied first in the UK and

Europe, where the demand for RTL/2 and Coral is high.

Interestingly, one of the first customers for HPAC RTL/2 will be ICI. The ICI front end has, up till now, been common to all RTL/2 compilers, contributing greatly to the enforcement of a rigid standard for the language.

Despite this, the company is reported to have given wholehearted approval to the HPAC product, which it is likely to use initially on the NM4.

There is already an SPL implementation of RTL/2 for the NM4's predecessor, the NM2, but CA says that it will be recommending HPAC RTL/2 on both machines.

According to a spokesman, this is partly because the SPL version is less efficient, being targeted at a register-based architecture like that of the PDP-11.

HPAC RTL/2 has also been implemented on the Data General Micronova, Nova and Eclipse (Software File, January 4).

Outside Europe the HPAC compiler likely to be of most interest is Fortran 77. Fortran 77 has not yet been implemented by CA, though it does have an

implementation of Fortran IV.

A feature of the HPAC compiler is that it can process either Ansi 1966 standard Fortran or Fortran 77 according to the setting of a compile-time switch. It also includes switchable options for processing Hollerith data types and real time extensions.

All the compilers will be available to CA users at £750 each, marking a significant reduction in prices previously quoted by HPAC.

According to Mike Brown, division manager for Industrial and Commercial Computer Services of Kingston-upon-Thames, Surrey,

CA, he said, saw itself primarily in the business of selling hardware and wanted to keep software costs low.

UK Professor for top Ada job

A UK expert is to head the Pentagon team working on the programming support environment for Ada, currently defined by the Problemman specification.

He is Professor John Buxton, Dean of the College of Arts and Sciences at Warwick University, who will spend a year in the US co-ordinating the Problemman effort for the high order language working group of Darpa.

The news follows York University's proposal that it should set up a centre to co-ordinate work on Ada in the UK. This would also concern itself primarily with the support environment (CW, July 5, 1979).

● The Ada test and evaluation newsletter reported that an update to Problemman should be ready by mid-September.



Pascal for Honeywell

A PASCAL compiler is being developed for internal Honeywell use by Oregon Minicomputer Software, of Portland, Oregon. It will be based on the second generation Omsi Pascal-2 optimising compiler.

The latter is the successor to Oregon Software's Pascal-1 compiler for the DEC PDP-11, which has around 400 users worldwide. Both versions are marketed in this country by Hounds Computing, of Stafford.

Pascal-2 will employ global register allocation and constant folding techniques.

Report generator for Datasystem

A REPORT generator and a semi-interactive data file editor for DEC Datasystem users are being marketed by Industrial and Commercial Computer Services of Kingston-upon-Thames, Surrey.

Implemented as Report-11 on the CTS 300 and as Report-8 on the COS 310, the report generator is driven by parameters

which may be input at run time if required.

Features of the program include the ability to apply a variety of selection criteria, to scan selected areas of a file, and to accumulate totals or compute results.

The editor, ED-11, is based on the same principles as Report-11

adding change, insert, and delete facilities. Both operate as self-contained utilities which allow other terminals to be active concurrently.

Bought separately, ED-11 costs £550 while Report-11 and Report-8 each cost £450. Alternatively, Report-11 and ED-11 can be bought together for £750.

Dijkstra tops bill at fourth software engineering forum



A FORMIDABLE array of software experts, including Professor Edsger Dijkstra (above right) and Jean Ichbiah, one of the chief architects of Ada, will be among speakers at the 4th International Conference on Software Engineering, to be held in Munich in September.

This is the first time that the conference has been held outside the US and represents an important opportunity for software managers and planners to inform themselves of emerging techniques.

A strong theme of the conference this year will be the application of automated tools to software engineering, including, for example, the use of computer aided development environments.

Such tools, along with aids to managing large software systems throughout their life cycle, attracted a high proportion of submissions following the call for papers and form the subject of several major sessions.

Among other topics to be covered, both by practitioners and researchers, are the role of software engineering in microprocessor work; the impact of language on software engineering and the role of constructive techniques.

The conference will open and close with a discussion of software engineering as it was, as it is, as it should be, and as it will be, for which the respective speakers are Brian Randell, Barry Boehm, Edsger Dijkstra, and Wlad Turski.

● Early reservations are ad-

vised for the conference as it coincides with the major exhibition Systems, also held in Munich.

Full program details, including application forms, are available from Dr Douglas Cook, Department of Computer Science, Exeter University, Stocker Road, Exeter, who is also hoping to arrange charter flights from the UK.

Total now on NCR 8000s

A VERSION of the database management system Total has been implemented by Cincom Systems for the V models of NCR's 8000 range. The new version is upwards compatible with that available for NCR's Century machines and supports both batch and online operation.

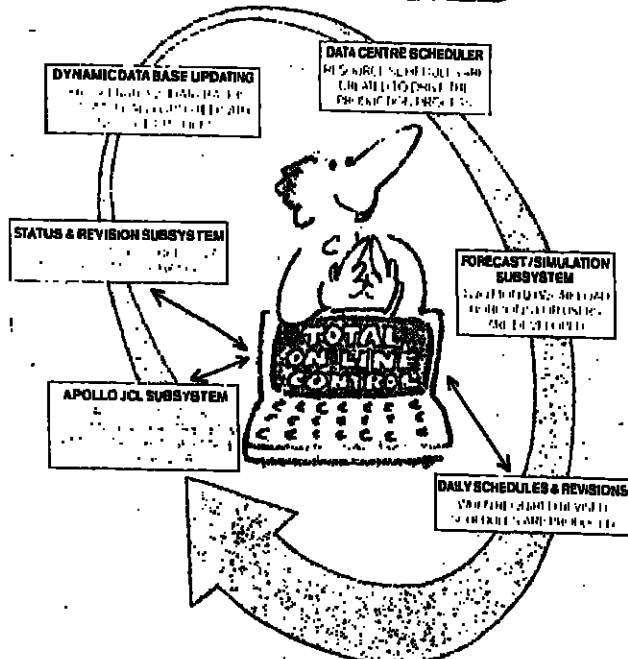
The DBMS software is backed up with implementations of two supporting packages, the Data Dictionary and Utilities. The latter provides high-speed database load/unload facilities as well as statistical information to control the database.

Interface to CA-Earl

THE latest release of A. J. Randall's Auto-Graph includes an interface to the report generator package CA-Earl, enabling users to access Auto-Graph facilities from the CA-Earl language in addition to Cobol, PL/I, and BAL.

Auto-Graph generates graphical output on a line printer, plotting up to four graphs on a single pair of axes. A permanent licence, including the new interface, is priced at £850.

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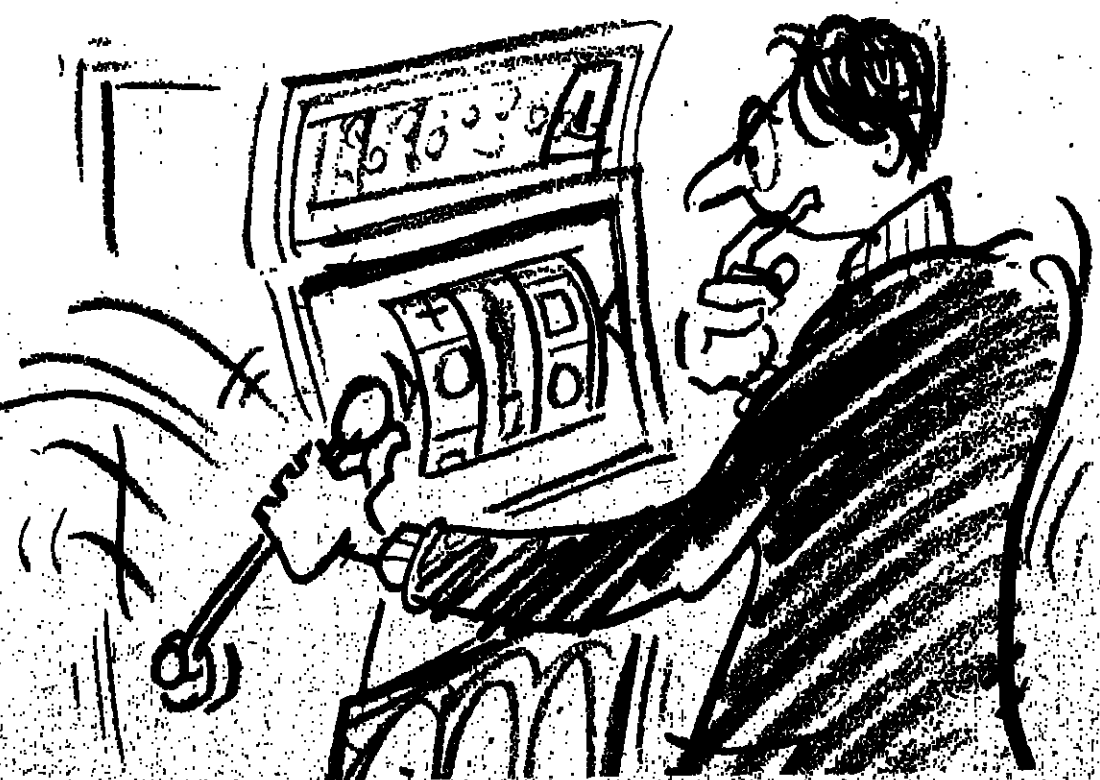
2 If you don't have an early order position we have ordered £16 million worth of 4300 systems and we may be able to supply one to meet your requirements.

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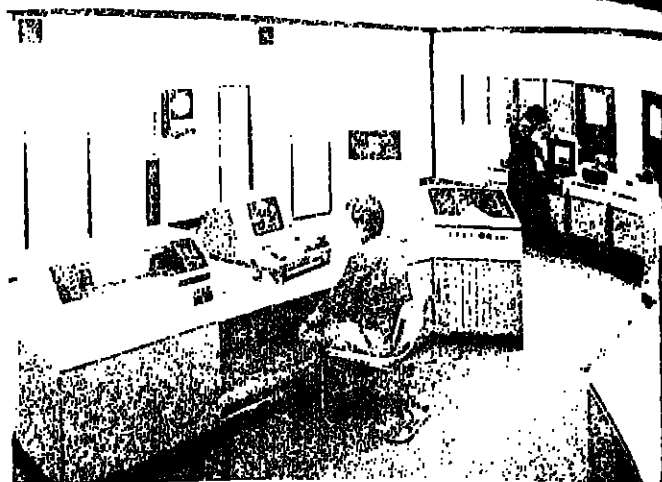
By Bernard Allen

Getting it right from scratch

THE beauty of building a new installation from scratch is that you have the chance to get the computer room just right — and as the picture on the left shows, Volvo's new High Wycombe centre was certainly started from scratch.

The dirty old workshop was turned into a sparkling new computer site (right) at a cost of £100,000 by Wright Air Conditioning (Birmingham), which also designed and installed the air conditioning system.

The computer room accommodates two ICL 2950s, which are handling work previously run at Volvo's site at Crick, Northamptonshire.



Phone loudspeakers for noisy rooms

IN last week's Op Spot we had a hint relating to the use of telephones with a volume adjustment facility as a means of helping the operator deal with calls in a noisy computer room.

And, taking such a step further, the Post Office has introduced a small loudspeaker system to be coupled with the telephone. It enables the user to conduct conversations while moving about at a distance from the device.

Called Doric, it has a volume adjustment

facility, eliminates low-level background noise and has a cut-out button so that the telephone can be used in the conventional manner if desired.

According to the Post Office, Doric is intended primarily for domestic use, but is also suitable for the computer room environment. It would, for example, allow the operator to tend a printer and talk to job control at the same time.

The rental charge for Doric is £14 a quarter.

Altering unit status with Vary

THE Vary command is used by the IBM OS operator to alter the status of units on the system configuration.

By means of this command, tape and disc units, for example, can be placed in an online or offline state. In the former, they may be allocated to jobs, while in the latter they may not.

A tape unit will, typically, be placed in an offline state so that it can be serviced by an engineer

or cleaned by one of the operators. The command to place tape unit 280 offline is:

V 280,Offline

In relation to systems consoles, the operator uses Vary to assign authority, and specify which of the various system message streams are to be routed to each device. For example, to give console 390 full authority with messages relating to the entire system

(system tasks, TP network, tapes, printers, etc), he enters V 390, Console, Rout = All, Auth = All.

The parameter Auth = All enables the operator to use the console to start and stop procedures, hold and release jobs, and carry out many other functions. An alternative is Auth = IO, which will only allow him to enter commands relating to input/output functions.

Narrow-minded? — no, just standing up for themselves

THE action taken by the operators at the West Midlands Health Authority (CW, July 12) may seem a mere gesture when compared to the operations involved in the current Post Office dispute.

In terms of persons taking part and the extent of their action, it is small — just 13 operators are involved and they are refusing to run some 16 special back-pay jobs for WMA employees who have already had pay rises.

But, as pointed out in a recent Computerweek, the effects of such actions are disproportionate to the number of operators involved.

At the time of writing, those affected already include the likes of West Midlands ambulances, hospital maintenance staff and blood transfusion operators. All await considerable sums of back pay.

In addition to this, the operators will refuse to run all new pay awards work if their pay rise has not come through by July 31.

Non-operations, non-union persons may well agree with a report in a certain Midlands paper which described it all as a "You don't get your money until we get ours" dispute, implying that the operators are being narrow-minded and selfish.

As one with an operations background, I view the matter from a different angle, although I do sympathise with the unfortunate WMA staff hit by the action.

As we all know, operators in general are very much the poor relations of the computer industry, in terms of recognition, pay and career prospects. That being so, they often have to stand up for themselves.

It is unfair to label the WMA operators as "buddies." They are acting on behalf of and with the full backing of the local branch

Managers' seminars

INFOTECH Operations is breaking new ground with its international management forum (Op Spot, July 12).

Intended primarily for the operations manager, it comprises a series of seminars which will examine developments in technology and their effect on the operations function.

According to Infotech, the conferences, or modules — all of which are to be held in London — will enable users to hear speakers who are experts in their own fields.

Operations management over the next five years is the theme of the first meeting, on October 17-18. Topics include future strategies for the operations manager, data protection and security in the 1980s.

HINT OF THE WEEK

Pause, not Assign on procedure libraries

PROCEDURE libraries and the use of override cards in DOS/VS environment are the subject of a hint from O'Reilly, chief operator at Astral Computer Services, the City of London.

O'Reilly advocates the use of procedure libraries to save job control staff from having to keep stacks of punch cards.

But, as he points out, problems can arise when the cards are mispunched and therefore fail to carry out function.

When that happens, the default files — those specified in the original Assign statements — will be used instead. This will cause serious problems if, for example, the application has a four-week tape cycle.

To avoid such occurrences, don't place Assign statements on the procedure library. Instead, put //Pause statements which will give control to the operator and inform him of the error.

This is the theory behind O'Reilly's hint.

If the override Assign statements are punched correctly, they will replace the //Pause statements in the procedure and then run as normal.

If, however, the Assign statements are incorrectly punched, //Pause statements will still be in the procedure at the time (see Fig 1). They will cause the system to give control to the operator and instruct him what to do.

After this, the operator presses the end-of-block key, which will cause the system to fail with an "logical unit" message, and no harm done.

Figure 1: An example of a procedure which has //Pause statements, including messages informing the operator what to do in the event of an error.

```
RIBAPRS VERSION 0.0 17 BLOCKS
PROCEDURE LIBRARY DATA%YES
* MONTHLY PROOF SORT RIBA
// PAUSE ** OVERIDE CARD IS MISSING -
CONTACT CONTROL.
// PAUSE ** OVERIDE CARD IS MISSING -
CONTACT CONTROL.
// ASSGN SYS003, 1161
// TLBI SORTOUT, RIBA SORTED, 20
// TLBI SORTINI, RIBA VALID, 0
// EXEC SORT
SORT FIELD, 1, 18, 31, 3, SIZE, 5000,
FILES, 1, WORK, 1
RECORD TYPE, F, LENGTH, 36, 30
INFILE, BLKSIZE, 2560
OUTFILE, BLKSIZE, 2560
OPTION PRINT, ALL
END
//
// RESET SYS001
// RESET SYS002
//
// JOB XRUN
// EXEC PROC = RIBAPRS.OV
// ASSGN SYS020, TAPE, VOL = TAPE01
// ASSGN SYS021, TAPE, VOL = TAPE02
// DVEND
//
```

Figure 2: A job to execute procedure RIBAPRS statements will override the //Pause statements.

If you've an interest in peripherals then don't miss PACE

The first PACE (Peripherals at the Centre Exhibition) being held at the Cunard International Hotel, Hammersmith on 11th, 12th and 13th September has been specifically tailored solely towards the interests of both OEM's and end users of computer peripherals. If therefore your main interest is in peripherals this new concept of exhibition organising will save you both time and money.

In one compact area will be assembled a worldwide cross section of peripheral manufacturers' products covering the whole field including plotters, visual display units, printers, disc drives, graphics terminals, digitizers. In one day you will be able to see all the exhibits at leisure and in comfort without the distraction of extraneous products and services because one of the tenets of the organisers is the restricting of participants in the exhibition to peripheral manufacturers and distributors. It will be easy for you to compare like with like; to obtain the latest information and to see up to the minute developments being demonstrated.

A new microprocessor based drafting system



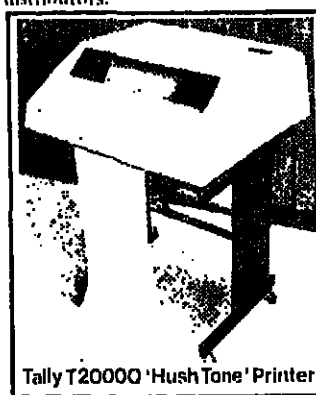
Personal Display Systems Limited of Blackburn will be showing Summagraphics Unigrid II, a flexible powerful microprocessor based interactive drafting system — an ideal low cost tool for use by electronic designers, architects, photographers, planners, in documentation, numerical control and data preparation.

Unigrid II is easy to learn, easy to use, powerful, efficient, accurate and cost effective and it will be on show at PACE.

New Company chooses new exhibition

DRG Business Machines, a new acquisition for the Dickinson Robinson Group, divides its energies between small business systems and peripherals. On the peripheral side the company will be using PACE to display for the first time in the U.K. the V-4 Data range of disc drives and a new family of VDU's from Beehive.

Mike Kilmarin, Managing Director of DRG Business Machines, regards PACE as an opportunity to meet the OEM market and interest local distributors.



Tally T20000 'Hush Tone' Printer

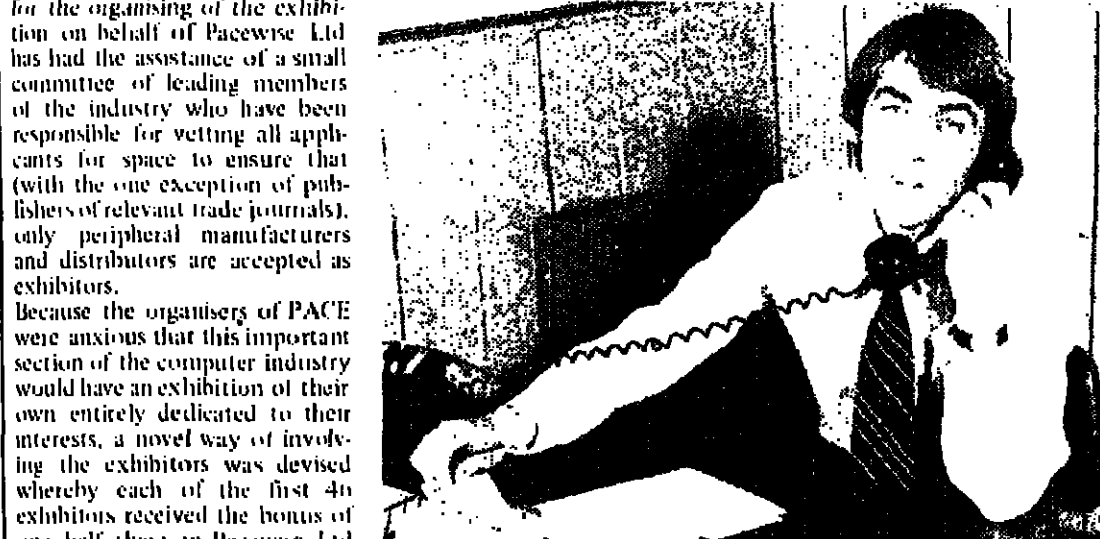
Pete Tait, Marketing Vice President of Epson America Inc. had no hesitation in choosing PACE as the best opportunity to announce

An Exhibition with a difference

An exhibition organised by exhibitors for exhibitors' specific needs sums up the thinking behind the organisation of PACE. For some time leading manufacturers and distributors of peripherals have felt that there is a need for an exhibition restricted to peripheral products.

Martin Boulton of E.W. Barney (Bristol) Ltd the man responsible for the organising of the exhibition on behalf of Pacewise Ltd has had the assistance of a small committee of leading members of the industry who have been responsible for vetting all applicants for space to ensure that (with the one exception of publishers of relevant trade journals), only peripheral manufacturers and distributors are accepted as exhibitors.

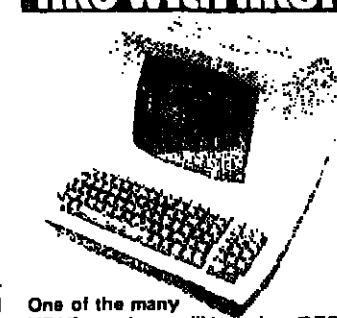
Because the organisers of PACE were anxious that this important section of the computer industry would have an exhibition of their own entirely dedicated to their interests, a novel way of involving the exhibitors was devised whereby each of the first 40 exhibitors received the bonus of one half share in Pacewise Ltd which entitles attendance at the A.G.M. and a share in the profits, though the making of large



The following companies are exhibiting, or have products on show, at PACE:

- | | |
|------------------------|--------------------------|
| Amplex | Learn Siegler |
| Amadex | Lynne Peripherals |
| Bealve | Lynwood Scientific |
| Bonsons | Magatak |
| Calcomp | MFE |
| Century Data | Midlection |
| CMC | Newbury Laboratories |
| Data Design Techniques | Nicolet Instruments |
| Data Systems Design | Penny & Giles |
| DSI | Pericon |
| Data Type Systems | Peris |
| Data Type Terminals | Plessey |
| DEC | Hamtek |
| Digi Data | Summagraphics |
| Epson | Tally |
| Gamma | Telex |
| General Audio and Data | Teleprinter Equipment |
| Communications | Tele-type |
| Hazeltan | Televiduo |
| Hyperon | Terminal Display Systems |
| Imiac | Y-E Data |
| Lambert | |

Comparing like with like?



One of the many VDU's on show will be the DT22 from DATA TYPE TERMINALS.

CALCOMP

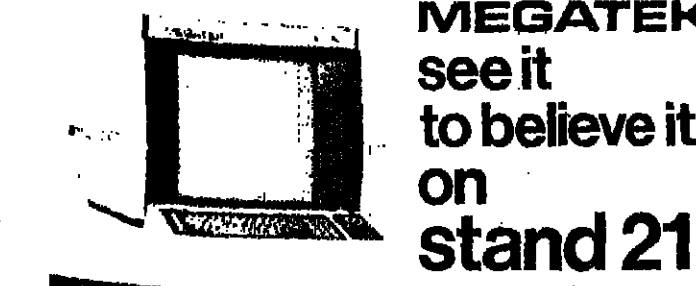
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11, 12, 13 September

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PEOPLE AND EVENTS

Computing tournament

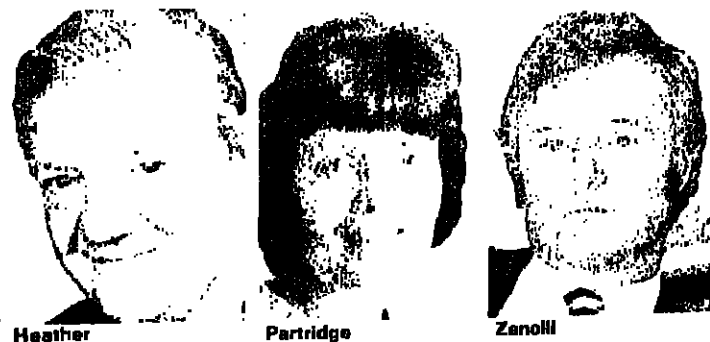
FOUR teams of Yorkshire schoolchildren stand the chance of winning a microcomputer this week, in the finals of the GMS Computer tournament. The children, all 15-17-year-olds, were successful in the elimination round of the competition, which is sponsored by GMS, the Sheffield based computing bureau.

More than 50 teams entered this year's tournament, in which they had to submit designs concerned with the ergonomics of a computer-based office.

Among the many imaginative entries was the suggestion of heavy blinking periods for VDU users to avoid eye-strain. One of the successful entries recommended the use of polychromatic glass to counteract solar glare and heat.

Although they failed to reach the final, a young team of 13-year-olds from Sheffield Boys Independent Grammar School received a special commendation from the judges.

Ian Hillier-Brook has been appointed sales manager for Gamma Associates, where he was previously sales consultant.



French country manager

MEMOREX in Europe has announced the appointment of Jean-Claude Zanolli as country manager for the company in France. As general manager of Memorex SA, he will have responsibility for 300 employees and over 100 customers. Zanolli joined Memorex from Eridon in 1971. He has been sales manager for France and his most recent appointment was as marketing manager for the company's computer equipment products in the European headquarters in London.

Joe Dacey has become production control manager for Rediffon Computers' factories at Crawley and Poole. He was previously with TIPP Developments as works manager. Stan Storer has been appointed inventory manager. He was formerly production control manager with the company.

On board at Rockwell Collins

Barry Ofield has been appointed executive chairman of the board of directors of Rockwell-Collins (UK). He was previously managing director of the firm, and is succeeded in this position by John Dickens, who will be responsible for operations at the company's new facility at Reading. Ofield will operate from the firm's headquarters in Hounslow.

Mike Bray has been promoted to the position of field sales manager for Alacra. He has worked in the company's sales division for the past 16 years, most recently in charge of special accounts. He is succeeded by Llewellyn Watkins. Alan Jones has been appointed as a salesman, transferring from the Alacra Service department where he was an engineer. UK services manager is John Prysky, formerly southern area services supervisor.

Andrea Burns has become a systems analyst for the North-East branch of Rediffon Computers. She is a former programmer with NCR. A junior systems analyst for international marketing is Annette Peach, formerly a senior instructor for the Southern branch. Val King has joined the company as branch support manager for the financial branch. She was previously with Harris Systems as a systems engineer.

Soccer results

Division 1
Aston 1, Ipswich 2
Aston 4, Liverpool 2 (penalties)
Division 2
Barnsley 1, Arsenal 1
Barnsley 1, Ipswich 2
Barnsley 1, Ipswich 2
Division 3
Barnsley 1, Ipswich 2
Division 4
Forest 1, Aston 2
Hull 1, Ipswich 2
Hull 1, Ipswich 2
Division 5
Nottm 1, Barnsley 2
Nottm 1, Barnsley 2

Derek Beasley has been appointed head of personnel and administration of Data Logic. He has been senior industrial tutor in the Business Studies department for the past year.

David Collins has become technical support manager for CMC, based in Manchester. He joins the company from paint manufacturers D. MacPherson.

Martin Degens has been promoted to regional sales manager for Boeing computer centres. He will be based in the Home Counties, where he was formerly a salesman.

CONFERENCES

LA RAULE, the beach resort on the southern coast of Brittany, is to be the venue for the 18th International Symposium on computer architecture. This will be the seventh symposium in the annual series sponsored by the Association for Computing Machinery and the IEEE Computer Society, but this is the first to be held outside the US. Papers are solicited on any aspect of computer architecture, and those wishing to submit a paper should notify the program committee chairman before August 1, 1979. The conference is scheduled for May 8-8, 1980.

A CONFERENCE on simulation, tools and techniques, to take place from September 5-6, 1979, will discuss how to make simulation projects succeed through the use of techniques currently available. The conference will be held in Washington DC, at the Ramada INN-Rosslyn. Speakers will include Joe K. Clema, from Simulation Technology; and Claude DeLafosse, from CACI, the company that is organising the conference. They will cover such topics as simulation methodology and implementation methodology for large scale models. Details and registration information can be obtained from Vickie Carlton at CACI, 12011 San Vicente Boulevard, Los Angeles, California 90049. Tel: 213-476-6311.

DIARY

JULY 18-20
IBM CUA Local authorities group county Centre, Cambridge.

JULY 25
Computer handling of large files, conference, L. P. Sharp Associates, Buckingham Palace Road, London SW1, 9.30 Tel: 01-730 0361.

JULY 26-27
Workshop on program transformation, IBM Federal systems of computing group Imperial College, London.

AUGUST 4-8
Pattern recognition and image processing, IEEE Computer Society, Chicago, Illinois. Contact: Patrizio Longo, PO Box 633, Silver Spring, MD 20901.

AUGUST 18-23
Third Rocky Mountain Symposium on microcomputers, IEEE Computer Society, Pingree Park, Colorado. Contact: Michael Tindall, Dept of Computer Science, Colorado State University, Fort Collins, CO 80523.



Girls join builders and fitters

SIX Rediffon girls have found a pleasant and interesting alternative to their former jobs as wiremen with the company. They took the opportunity of joining the newly-formed computer production assembly, of which they now form the nucleus.

Maxine Boardell and Alice Bazyluk are assembly operators responsible for the initial electrical work within the computer processors. When this has been completed the frames are passed over to Jo Watt, Lyn Chapman, Kathleen Carter and Joyce Ward, computer assembly operators, to start the building programme.

Three of the girls are seen here at work assembling the central processor.

I'VE THREE OFFERS OFF SICK THIS WEEK



...ALL SUFFERING FROM EYE-STRAIN



I DIDN'T THINK VDUS WERE THAT BAD



NO - THEY WERE LARGER FOR SIGNS OF THEIR BACK



By Judith Morris

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00-7302	4.8MB Disc Controller	£1800
00-7304	2.4MB Disc Controller for Data General	£1250
00-7305	2.4MB Disc Drive	£2100
00-7306	4.8MB Disc Drive	£2250
00-7308	Disc Drive for 7305 & 7306	£300
00-7311	Storage Module Controller	£4150
00-7360	32MB Storage Module Disc Drive	£4500
00-7362	64MB Storage Module Disc Drive	£5600
00-7364	128MB Storage Module Disc Drive	TBA
00-7366	256MB Storage Module Disc Drive	TBA
00-7303	RK05 Adaptor Cable	£45
00-7348	Rediffon 40MB Cartridge Disc Drive CD03748	£4500
00-7320	Rediffon 20MB Cartridge Disc Drive Memorex 660	£4000
00-7310	Disc Controller for 7320/7348 Disc Drives	£3000
00-7312	Disc Controller for 7362, 7364 storage module disc drives	£7000
00-7359	Storage Module Disc Sub-System includes 1x 7312 Controller, 1x 7364 128MB SMD, all cables, connectors, and five standard cabinet	£24000
00-7300	Short Disc Drive Cabinet	£400

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00-7601	Paper Tape Reader 500 cps with PDP11 Interface	£1420
00-7602	Paper Tape Reader 700 cps with PDP11 Interface	£1648
00-7603	Paper Tape Station including 350 cps Reader, 70 cps Punch, PDP11 Interface	£3398
00-7604	Paper Tape Station including 700 cps Reader, 70 cps Punch, PDP11 Interface	£3460
00-7660	300 cpm Punched Card Reader	£2550
00-7661	300 cpm Punch	£2550
00-7603	Hole Optical Mark Sense Reader & PDP11 Interface	£3354
00-7632	EIA RS232-C Serial Interface for 7603/7604	£325
00-7612	Interface for 7660	£410

LSI II COMPATIBLES

PART NO.	DESCRIPTION	PRICE
00-7900	Serial Asynchronous Interface switch and programme selectable UART parameters and baud rates (75 to 19,200), switch selectable address and vector RS232 or 20ma LSI-II QBUS compatible, one dual height slot	£160
00-7901	Asynchronous Interfacing General Purpose Parallel I/O Module 16 bits input, 16 bits output, interrupt control, LSI-II QBUS compatible, one dual height slot	£193
00-7903	DRIVE-11-B 16 bit parallel interface DMA	£390
00-7904	16 KW Mos Memory	£845
00-7905	64K byte Mos Memory, 300 Nanosecond access, 450 nanosecond cycle, card extractors, LSI-II QBUS compatible, one quad height slot	£1050
00-7906	Cartridge Disc Controller interfacing most RK05 compatible disc drives to LSI II includes cable, one quad slot	£1650
00-7907	Floppy Disc Controller LSI-II format 8 inch floppy disc drives, uses Group 1 and Group 2 for storage up to 640K bytes per disc, card controls up to 4 drives	£1080
00-7908	Dual floppy disc sub-system	£2575
00-7909	Line Printer Controller parallel interface for centronics, data 100, data products and other line printers, card controls data 100, LSI-II QBUS compatible, one dual height slot, 4000 characters per line	£195
00-7911	Multiple general interfaces, 4	£100
00-7912	Asynchronous serial V/F on one dual card one serial line may be used to drive parallel printer	£305
00-7913	Card cage and backplane, 8 quad (16 dual) height LSI-II QBUS slots; wedged sockets for easy module insertion 10.5 x 4.64 inches x 11.62 inches	£250
00-7913	LSI-II Microcomputer 61,440 bytes RAM operator's console, line frequency clock, asynchronous serial I/O module, extended instruction set, floating point arithmetic EPROM sockets, QBUS terminator 8 quad slot backplane and switching power supplies Eleven extra dual slots	£2647
00-7914	Terminator/Bootstrap Clock module: provides LSI-II QBUS termination, power-up sequencing, front panel haltable switch and indicator, real-time clock, PROM sockets, one dual height slot	£200

PRINTERS AND INTERFACES

PART NO.	DESCRIPTION	PRICE
00-7505	Line Printer 1/8 short	£385
00-7506	Line Printer 1/8 Long Line Driver	£385
00-7510	Hyterm KSR Terminal	£2500
00-7735	30 CPS LA36 20MA	£895
00-7736	30 CPS LA36 EIA Numeric Cluster	£1010
00-7534	LA 36 Conversion Module to convert LA 36 to 1200 baud terminal with many added features	£545
00-7530	300 LPM Band Printer	£4200
00-7560	600 LPM Band Printer	£3400
00-7590	900 LPM Band Printer	£3800
00-7740	Superior KSR Terminal 60 CPS OPT 'D'	£1265
00-7741	Superior KSR Terminal 120 CPS OPT 'D'	£1800
00-7742	Pedestal for 7740/7741	£115

MAGNETIC TAPES AND CONTROLLERS

PART NO.	DESCRIPTION	PRICE
00-7419	Controller and 1st 9 Track NR21 Mini Tape Deck	£4135
00-7418	Additional Deck for 7419	£2221
00-7430	Controller & 1st 9 Track NR21/PE Switchable Maxi Tape Deck	£5780
00-7431	Additional Deck for 7430	£3408
00-7400	Cabinet to house items mentioned above	£550

VISUAL DISPLAY UNITS

PART NO.	DESCRIPTION	PRICE
00-7752	Fungus MKI VDU & Keyboard	£885
00-7753	Fungus MKI VDU & Keyboard	£885
00-7754	Fungus MKII Micro-processor based VDU	£985

MISCELLANEOUS ITEMS

PART NO.	DESCRIPTION	PRICE
00-7004	Four Slot Back plane	£210
00-7009	9 slot back plane	£365
00-7049	Unibus jumper	£78
00-7055	15pin Unibus cable	£130
00-7810	BFO Protect Cable	£275
00-7230	Ball expansion chassis	£1600

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MICRO NEWS

Broadway opening

THIS is Mike Danney, one of the two founders of a new computer store set up to serve the West London area.

The company is Adda Computers and, based in the Broadway in Ealing, it will be dealing in Pet, Apple and Nascam hardware.

With his partner David Whitehead, Danney intends to provide a wide range of customer support services, including systems design, programming and hardware engineering services.

Two-way second sourcing

MOTOROLA and Rockwell International are currently negotiating a two-way second sourcing deal which will give each a domestic US alternative supplier.

Rockwell's Microelectronic



Devices division is expected to build Motorola's 68000, 16-bit processor, thus joining Hitachi as an alternative supplier, while Motorola will probably become the second source for Rockwell's 256K-bit bubble memory.

Rival to minis will follow AMD-Zilog collaboration

by Martin Banks

THE first fruits of the second source agreement between Advanced Micro Devices and Zilog for the Z8000, 16-bit microprocessor, should soon be seeing the light of day from AMD's Sunnyvale, California, factory.

AMD has made public the details of three peripheral control devices which, when connected in systems configurations with the Zilog processor, should give a processing capability that genuinely starts to rival that of minicomputer systems.

To allow full advantage to be taken of the processing power of the 16-bit device, the new peripheral circuits will employ a combination of complexity and

performance never needed for 8-bit processors.

An indication of this can be seen in one of the peripheral chips, a device called a burst error processor. This is more than capable of dealing with data transfer at the rates used by hard disc storage systems.

The other two devices, a video display controller and a direct memory access controller, will have the ability to fetch their own commands from memory in the same way as the CPU.

The burst error processor, like the other two devices, satisfies the main criterion for peripheral chips, that of unloading the CPU overheads wherever possible, so

that it is free for other work.

When a data block moves from buffer store to disc memory, the burst error processor adds bits to the end, in accordance with a polynomial calculation designed to detect and correct errors. The 24-pin device, which need not even be connected directly to the CPU, is designed to be part of a micro-programmed disc controller.

As well as monitoring the data blocks between the buffer and disc, it also monitors the data going into the buffer, and compares the two. If differences are found, the disc controller then inverts the incorrect bits, in memory.

With this device, block lengths of up to 1,000 bits are possible, and data rates can be as high as 20 Megabits per second. Both the DMA and display controllers connect directly to the Z8000 bus. The DMA will be able to load its own control parameters, and will also give the option to chain DMA operations together automatically.

The display controller is still in design, and AMD is hoping to include several advanced features such as multiple screen windows with any number of cursors per window, and variable spacing with justified margins.

According to AMD, the burst

error processor should be available before the end of this year, the other devices following during 1980. As part of a second source agreement, it will also be manufactured by Zilog.

West Country store

A SHOP has been opened in West Country to sell the TRS80 Apple, Atari, Edman CompuColor hardware by company called T and V. The shop is in Wootton Bassett, Wiltshire, and has a range of off-the-shelf hardware packages will be available to the expected clientele of car business users, accountants and the like.

The company, which has been in operation for some time, has also been appointed European agent for the Lifebeat Associates, software products. These, available in a wide variety of disc formats, and there are nearly 50 programs in the range covering most business needs from word processing to complete accounts suite.

Music synthesis chip in production soon

THE programmable sound generator chip announced earlier this year by General Instruments Microelectronics, the AY-3-8910, promises much easier implementation of music and sound effects synthesis under microprocessor control, but it has suffered repeated delays.

One change of specification was made to improve yields, and at the same time the layout of internal registers was modified to enable pitch changes to be made with fewer instructions in some cases.

Sample quantities of earlier versions were circulated, but no

UK orders were generally placed for next month's supplies will go to the games makers. In the US, the company is talking to manufacturers, and thinks orders of hundreds of thousands of devices are possible.

Distributors do not expect to be able to offer small quantities, for example to hobbyists, until October.

The device enables a range of polyphonic sounds to be generated with very few components, and much less processor overhead than previous methods.

Surgery on Apple II first of a series

THE idea of surgeries for microcomputer hardware has proved popular enough for Micus, the specialist microcomputer group of the Institute of Data Processing Managers, to start planning for system other than the Commodore Pet.

The first addition to the types of hardware to be "doctored" at the surgeries will be the Apple II, and the first session is scheduled for August 23 at the offices of Digisys, 88 Oxford Street, London, W1. The group is also plan-

ning later surgeries for the Tandy TRS80, the Intellivision, and the North Star among others.

In addition to a video equipment and software show, the Apple surgery will feature six users. The group is available for questions and advice on applications.

Two of the main topics to be covered will be communications with bigger computers, and Pascal on the Apple system.

Forth for Tandy TRS

FORTH, the dictionary-organised language that has already been optimised to run on the RCA 1802 microprocessor, has now been adapted to run on the Tandy TRS 80 personal computer system.

This latest version of the language is called MMSForth and comes on single diskette. Among the facilities it offers are enhanced keyboard command interpretation, and more sophis-

ticated and rapid string sorts. It comes with a built-in operating system, and can work with arrays and double-precision arithmetic. There is also the possibility of a deeper capability. On similar applications, the Tandy-supplied MMSForth is said to be 10 times faster than the standard Forth.

AI on a chip 'in two years time'

THE techniques of artificial intelligence will emerge from the laboratory and be sold commercially on a chip within two or three years, claims Edward Feigenbaum, of Stanford University, California. He thinks that a medical diagnostic program he has developed could and will be sold as an integral part of the spirometer equipment it works with, thus providing a practical application for a subject that has hitherto been regarded as theoreticians' dreaming.

Feigenbaum's program, named Puff, is an example of what is called an "expert system", containing in codified

form a set of about 100 rules supplied by a human expert, in this case a doctor. The computer is linked to a spirometer, which measures the strength and rate of a patient's breathing in order to detect pulmonary disorders.

Taking all the different measurements, together with information from the patient's record such as age, sex, and rate of smoking, the program goes through the rules acting as an "inference engine" to work out the logic, and comes up with a diagnosis, such as emphysema or bronchitis.

Puff is in regular use at the Pacific Medical Centre in San Francisco, where a doctor checks the machine's diagnosis each time, and he agrees with it between 90 and 100 per cent of the time. Feigenbaum thinks that the software could soon be incorporated in every spirometer sold, so that instead of getting data out the doctor gets a diagnosis. A complete system could sell for less than \$10,000.

Feigenbaum was speaking at the artificial intelligence summer school at Edinburgh last week, where he described the latest developments in expert systems in the US, mainly in the medical field. The most advanced, he said, was Intersit at the University of Pittsburgh which had grown out of the well-established Mycin, Stanford's consultative system for diagnosis and therapy recommendation for infectious diseases.

Evaluation of Plato

A 12-MONTH evaluation of Control Data's Plato system (CW, December 7, 1978) has been carried out by the Royal Navy at its School of Educational and Training Technology in Portsmouth.

Four Plato terminals were used in the study and the results are being analysed for later publication as an internal report. The conclusions are favourable, orders for Plato systems could follow.

Meanwhile, in the US, CDC has revealed that over the last six years it has made a cumulative loss on Plato of \$32 million but that it will "break even" in the next three or four years.

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(ZA2)

Most recently the Stanford workers have produced a program cautiously entitled AGE, an Attempt to Generalise, which enables users to construct an expert system for any given domain, simply by conversing with the PDP-10 via Teletype. It is being merged with Uni, a package which helps deal with one of the most difficult problems, that of how to represent the expert knowledge within the computer.

Discussing the future of AI, Feigenbaum bemoaned the penny-pinching on the part of both the US and the UK governments over funding for this field, particularly when compared with such areas as fusion research. "What could be more important than machines which think?" he said.

INDUSTRIAL NEWS ROUND-UP

PO workers likely to accept pay offer

A POST OFFICE pay offer put to members of the Civil and Public Servants Association last week will almost certainly be accepted and so end the strike action by operators and clerical staff that has been a major factor in causing the telephone billing backlog of about £700 million.

With the strike now into its third month (CW, July 12), it looked as if a major revision in management thinking would be required, but this latest offer is the same as that accepted by the Post Office Engineering Union, and rejected by the Society of Civil and Public Servants.

It gives a straight pay increase of 9% with 7% for productivity, plus a further 2.25% in allowance for shifting the pay review date from April 1 to July 1.

The SCPS claims that it has created a considerable strike fund and so can continue its action until its claim of over 20% is met.

"I think the Post Office will have to write off at least £40 million by the end of this strike," said an SCPS spokesman, "and it will probably be at least July, 1980, before the phone bill backlog can be cleared up."

Ban continues

THE overtime and weekend working ban by members of the Society of Civil and Public Servants, which is affecting, among others, the Customs and Excise

computer centre in Southend, continues.

A quick solution is prevented by the government's clampdown on the public sector, which includes a freeze on promotion and recruitment plus cuts in department budgets (CW, July 12). A revision of these measures could be made next month, when the government's three-month moratorium is lifted.

Bank offer

AN abrupt end to all strike action by Midland Bank computer staff (CW, July 5) came about this week following an improved pay offer by the bank.

The offer, which will give an across-the-board rise of 15% plus 2.5% for productivity, and a lump sum of 2.5% at Christmas, was worked out through the mediation of the independent arbitration body ACAS.

2960 for Computel

COMPUTEL of Bracknell, Berks, is to take delivery of its third ICL 2960 this week. Added to its 2878 this is expected to enable it to provide soon over £5 million worth of services a year. The new machine will operate under DME to cater for growth in demand from 1900 users, who are either considering conversion to 2960, or just coping with overload.



This collage representing IBM computer and office equipment was presented to the company's Basinghall Street office in London last week by pupils of Woodberry Down Comprehensive School, Hackney.

IBM and the school set up a twinning arrangement in 1976 aimed at keeping IBM staff up-to-date with education trends and teachers in touch with business (CW, November 25, 1978).

IBM commissioned the collage and paid £500 for it. The money will go into Woodberry Down's twinning fund for special projects.

IDPM aims for 10,000 members by 1981

A TARGET of 10,000 members by 1981 has been set by IDPM chairman Neville Taylor in his annual report to the members, to be presented at the Institute's annual meeting on July 26.

Taylor will tell the meeting that membership has passed the 5,000 mark and "few professional bodies can boast a comparable growth rate and fewer still a more active and healthy organisation."

His report goes on to say:

"The main achievement during the past 12 months has been the setting up and consolidation of our administration... The need to build upon the solid base has been achieved and we can progress... to speed up recruitment and increase branch activities."

When the IDPM was formed

from the merger of the Institute of Data Processing and the Data Processing Management Association, the executives of the two organisations were combined and this year all the offices are open.

The annual meeting is to be held in London on Thursday, July 26 at the Royal Horseguards Hotel, behind Charing Cross Station at 4.30 for 5.00 pm.

The Institute of Data Processing Management has signed a five-year contract with Stirling Professional Publications of Edgware Road, NW2 for a year book. The first edition, due in January, 1980, is limited to full members. Members who wish to be excluded or want listed under another address should write to the IDPM.

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Over 10,000 turn out to see the latest in WP

A CHANCE to see the big word processing systems announced over the last year by several big computer manufacturers was the main significance of the annual International Word Processing Exhibition, held last week at Wembley. Otherwise the range of products on show from the specialist WP makers was not substantially different from last year, and the reaction of many visitors was "more of the same".

There was no shortage of visitors, however: attendance at 10,011 was up 61% on last year, showing that interest among the general public is growing at a healthy rate.

In the absence of any revolutionary mainstream products there were plenty of gadgets on offer from the manufacturers for attachment to their machines, ranging from improved stackers that at last output pages in the right order; to sensors that find the edge of the paper on the platen; to mechanisms for adding to golfball typewriters to provide electrical signals for input to a WP system. The Wing xerographic printer which was to have been the main attraction of the firm's stand was not in the event shown, although it was at the Hannover Fair in April.

The offerings of the computer giants included the IBM 3730

from Data Processing Division, Big Blue's first attempt at producing a true shared-logic word processor; ICL's 7700 Information Processing System, a two-station unit; and the OIS 140 from Wang, a firm which is no newcomer to this side of WP. Digital Equipment was at the Fair for the first time under its own name, showing the WS 200 shared-logic system and the WS 78 stand-alone.

The 7700 from ICL can only have one or two screens, with the ubiquitous floppy discs and daisy-wheel printer, and with the two screens costs £17,500. Its intended goal is the tantalising one of being able to do both WP and DP, and as might be expected it consequently leaves much to be desired on the ergonomic side, which is of course of critical importance in WP. For instance, there are dozens of functions operated by pressing a control key followed by a letter, and even with the menus that can be called up to remind one of the codes this involves a formidable amount of learning. Manipulation of columns of figures can be done, but the operation is complicated.

The link to an ICL mainframe that can be set up does, however, provide many advantages for file storage and communications, and not least of all, report writing. It is still all too common



The Jacquard J800 dual-purpose word processing and data processing system, launched at the Wembley exhibition.

for typists to have to copy out pages of figures from computer printout, in order to provide a decent-looking report, and with the 7700 this retyping can be done automatically, an undoubted boon for all concerned. The trend towards getting raw typing input into WP systems from existing ordinary typewriters seemed to be gaining momentum. As an alternative to OCR, two firms have introduced or are working on attachments to go on IBM golfball typewriters to sense the depression of the keys and convert this information into binary code for transmission to a word processor.

Dataword's Swedish associate, Wordex, is developing such a device which senses the movement of the typewriter's keys optically, and which should cost around £1,000 for each machine modified. This provides an input station much

cheaper than a WP screen and keyboard.

BDP Word Processing has a similar device already available, which it calls Intype. In both cases, the modified typewriter can be used only for input, not output, as the printing mechanism is unchanged, unlike with the Dataword Transwriter which acts as a word processor on its own. Roll on the day when all typewriters are electronic and such mechanical modifications are unnecessary.

Transmission of documents from a word processor to a facsimile machine was demonstrated on the Logica stand using a fax receiver from Muirhead, Logica's newly-acquired brother under the Nexos banner. Nexos itself had no stand at the Fair, but was in evidence in the form of glossy brochures displayed on Logica's tables, already carrying the Muirhead and Nexos names together.

Also on the Logica stand was Microwriter Ltd, demonstrating Cy Endfield's hand-held word processor with its chord keyboard (CW, May 11, 1978). Additional facilities have been added to the Microwriter including a TV interface to provide a full-screen display to supplement the hand-held unit's single line, and a cassette recorder to give unlimited offline storage.

Big sales gained at the Fair

SEVERAL big sales were announced at the WP Fair. The largest WP order yet to be publicly announced in the UK was for six Wordplex 7 systems, valued at £200,000.

At the same time Logica VTS has added another building society to its customer list. Following the Leeds Permanent (CW, July 12), the Huddersfield and Bradford which is buying a single seven-station Unix system.

ICL took its first order for a 7700 from Ipswich Borough Council.

Ipswich is installing a 2803 together with the 7700 to take over the work currently done centrally on the County Council's 1804S. The 7700 will work independently to start with, doing both WP and DP, but an integrated system will be developed with the 2803 over the next two years.

Logica attracts Newman from Palo Alto

DEVELOPMENT staff have been on the move around the WP companies. Logica VTS, contrary to reports that have appeared elsewhere, has made quite a coup in attracting William Newman, an Englishman who for some years has

Wang well placed to take share of a growing market

DEMAND for word processing systems has given Wang Laboratories a 63% increase in turnover to \$322 million in its financial year which ended in June 30. And net profits rose over 80% to about \$28 million.

Orders for all its products stand at \$180 million, more than twice the figure of a year ago, and that figure is all the more impressive because Wang says it normally ships products within 10 weeks of receiving an order. At this rate it will easily reach its target of a \$1,000 million turnover by the early 1980s.

"Our very high growth is due to our word processing business in the US," Fred Wang, vice-president of market planning and development and eldest son of the company's founder and president, told Computer Weekly at the Word Processing Exhibition. "But word processing is now growing fast in Europe and the Far East as well and next year it will get going in South America."

Wang is well placed to take advantage of most of these markets. It has subsidiaries in Belgium, where it has its European headquarters, the UK, France, West Germany, Denmark, Switzerland and Australia. It also has representatives in Africa and Eastern Europe.

About 46% of its business came from outside the US last year, with Europe accounting for about 25% of total business.

The Dataproc research organisation named Wang as the No 1 word processing system supplier in the US in 1978. Fred Wang claims that worldwide the company is top in screen-based systems, with companies like Wydec, AES, Wordplex, IBM and Xerox among the other leaders.

Industry estimates of the size of the word processing market put it at between \$800 million and \$1,500 million.

The word processing market is not without its problems, however. "Support is becoming a very difficult area," said Fred Wang. "You're not just installing hardware — it's a complete systems approach. You have to re-think the way offices are run in some cases."

"We give a very high level of support compared with the computing side of our business: our people are only one step short of being management consultants. Support costs are

very high and are growing. "We do train users but we also got a do-it-yourself training package for customers who want to do their own training. I think this is the way the business will go."

Although growth of word processing business was the main reason for Wang's impressive results last year, word processing accounts for only 30% of its income. Business 5% and 10% comes from a bureau and the other 60% from its computer business.

The mainstay here is still the 2200 small computer, introduced some 10 years ago, which brought more income last year than any other product area.

But Wang's VS series of mainframes, announced last 1977, looks set to overtake the 2200 in sales. In 1977-78 sales were \$8 million. Last year they shot up to \$60 million. And next year Wang expects them to reach \$120 million.

The VS series is roughly comparable with the IBM 434 with the recently announced VS-100 (CW, June 7) lining up against the 4341.

"IBM offers a lot of memory than we do but our systems have greater capabilities and are a cheaper," said Wang. "The 4300s have a big operating system overhead so we think our systems offer a better performance ratio."

Wang has sold out to systems. It puts a strong emphasis on selling through agents, mostly software firms. Wang is not selling directly. IBM 4300s directly. "Our reputation is in the small business system area with the VS series now building up from that."

"We have been selling systems to 2200-type customers but in the last year we have more emphasis on native accounts — the larger companies. We are getting into companies through individual departments which want a system for a particular application."

What about an even bigger system to put Wang's research guys are now looking at the VS-100 prototypes. "We haven't any time yet to work on bigger machines, but I'm thinking about it," Wang said.



ICL's venture into word processing, the two-station 7700 Information Processor.

DATA SYSTEMS NEWS

Major advance in data management

Perkin-Elmer steps into the centre of the commercial data processing arena with the introduction of a new COBOL-based transaction processing system for all Perkin-Elmer 32-bit Superminis, including the recently announced Model 3220.

New line printers

Perkin-Elmer announce two new line printers to meet the needs of medium throughput requirements. The LP300 and LP600, with nominal speeds of 300 and 600 lines per minute, are highly reliable, lower cost replacements for the comparable drum printers.

SOLID CHARACTERS

These new impact printers have solid horizontal character fonts, utilizing a continuous steel loop character band. Printing takes place when the contents of the 132 character buffer containing the data to be printed matches the character coming into position on the rotating band. Groups of characters are printed simultaneously on the same line so quickly that it appears that the entire line is printed at once. Since the font moves in a horizontal direction, the possibility of vertical misregistration of characters that produces wavy lines is virtually eliminated.

MICROPROCESSOR LOGIC

The LP300 and LP600 use microprocessor logic to control the electrical and mechanical functions as well as providing internal diagnostic testing to detect and indicate to the operator printer misoperations and malfunctions. Mechanically there are only seven major assemblies in the entire printer, which will ensure high product reliability and reduce overall maintenance costs.

REPORT GENERATOR

Perkin-Elmer has also introduced RPG II, an easy-to-use, batch-oriented report generating facility for use with Reliance.

Reliance developed by UK team

Reflecting the growing international stature of UK software expertise, the new Reliance transaction processing system is a product of the company's Commercial Software Development Group at Slough.

This Group, under its Director, Dr. Martin Waters, is responsible for commercial software development for Perkin-Elmer Data Systems worldwide.

A complete software system for implementing transaction processing on Perkin-Elmer's 32-bit computer, Reliance comprises the Integrated Transaction Controller, Data Management System/32, and Transaction screen forms and application programs programmed using ANSI standard COBOL, the user's data base being managed by DMS/32. This high-performance data management features the industry's finest integrity facilities, including auto-



Dr. Martin Waters

availability, smooth and simple operation and complete integrity of the data base regardless of any problem.

Significant features of the Reliance software system include: Transaction oriented data base manager (DMS/32); Support of up to 128 Model CRT terminals.

Unlimited number of transaction types.

Interactive program-independent screen form design.

Automatic field validation of screen forms.

User programming in COBOL. Automatic and transparent management of all communications activities.

Hierarchical transaction password system for security.

Broadcast and point-to-point messages between users.

RPG II report writer.

matic transaction rollback, automatic record locking and unlocking and a highly efficient rollover technique for data base reconstruction. System-wide recovery and restart abilities ensure maximum

availability, smooth and simple operation and complete integrity of the data base regardless of any problem.

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Broadcast and point-to-point messages between users.

RPG II report writer.

ISSUE NO 7

Vallance's on line

Leeds based electrical goods retailer, Vallance and Davison, are developing a computerised accounting, warehousing, and merchandising system based on a Perkin-Elmer 7/32 minicomputer.

Vallance's is a familiar sight in shopping centres in Yorkshire and the North Midlands. Dealing in electrical goods for the home, they run a chain of 24 shops and eight service centres, together with a thriving electrical contracting business spread throughout Yorkshire, Humberside, Teesside, Lancashire and Merseyside.

Computerisation plans are extensive and are likely to take up to five years for full implementation. Following an evaluation by DP Manager, Mike Nutter, it was decided that the greatest immediate benefit would arise from improvements in stock control.

FIRST STAGE

This, therefore, is the first stage of what will be a fully integrated system running on the Perkin-Elmer 7/32 minicomputer, TV rental and 11P accounting, ledger, payroll value costing and electrical inventory control files. Unusual and other information from the contracting side of the business will also be integrated.

POINT-OF-SALE

In addition to 280 point-of-sale terminals at the 24 retail branches, Perkin-Elmer video terminals are installed in the central warehouse, linked directly to the computer. Using a system of stock numbers readable by OCR lightpens, goods will be tracked from initial

delivery to the warehouse through distribution to the branches to eventual sale.

As well as detailed tracking of stock, information is distributed through an integrated system to the stock files, purchase and general ledger to give the benefits of an 'on-line' order entry system. This makes for easier production of merchandising analyses and demand projection as an aid to warehouse space planning.

Netherlands subsidiary launched

A new stage in the recent rapid expansion throughout Europe of the Computer Systems Division of Perkin-Elmer, is marked by the opening of a new Netherlands subsidiary.

The creation of Perkin-Elmer Data Systems NV is the outcome of a 12 month market evaluation during which time a number of systems have been installed. The existing scheduled premises of Muntweg, Products Division have been expanded to accommodate the computer systems Division subsidiary.

A new Netherlands Sales Manager, Robt Hoogstraaten, has been appointed and recruitment of sales support and engineering personnel is underway.

Address of the new operation is Perkin-Elmer Data Systems NV, Gebouw 70, Schiphol 5005T, Holland. Telephone 20-450791.

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TWO years ago, it was election year in France, and the French Premier, Raymond Barre, performed the inauguration ceremony at the big Sieb computer and office equipment exhibition in Paris. This year, President Chirac of France is preparing his own re-election campaign, and is scheduled to make the inaugural speech at Sieb. The ceremony takes place at 8pm on Thursday, September 20. The show opens on the previous night.

One of the innovations at Sieb — and one which looks suspiciously like a tip-off to the Germans for unhelpfully scheduling the biennial System Show against Sieb this year — is a section devoted to the OEM market.

Sieb runs from September 19 to 28; Systems, in Munich, will be from September 17 to 21.

INDIAN SCENE

Delhi software firm goes into Europe

THE problems involved in trying to win international business from an Indian base have persuaded one of the biggest computer companies, Computronics of Delhi and Bombay, to open offices in Brussels and Frankfurt.

"We would like to work in collaboration with European software houses, but we will also be seeking contracts from manufacturers and end-users," says Computronics president Vivek Singhal, who runs the Delhi end of the company while his brother, managing director Piyush runs the Bombay operations.

Computronics is interested in both system and application software, and will be giving programmers tours of duty in the European offices once some contracts have been landed.

Computronics, which now has a turnover of about £8 million, grew big by becoming the Indian agent for Electronorgtehnika, the Russian export agency, just at the time that the Indian government decided to expand computer business with the Soviet Union.

Russian computers installed in India have been paid for with system and application software, and Computronics has done much of the work itself, although it has farmed out a substantial quantity to other Indian organisations which have installed Russian machines (CW, July 6, 1978).

The Russian connection has been extremely valuable to Computronics, making the company the largest supplier of medium-scale computers in India. It has four machines of its own, an ES-1033 in Bombay, a 1022 in Delhi, a 1020 in Bhubai and a 1010 in Allahabad.

Computronics intends to continue to act as Electronorgtehnika's agent, and has been commissioned to run the Russian organisation's office in Iraq which will maintain Rjad machines installed there.

"We would like to provide the same kind of support service for a Western manufacturer in the Far East," says Vivek Singhal.

Computronics has its eye on Malaysia, where it plans to open its own service bureau, and on Indonesia, Singapore and Finland; in general it would like to sell and support a Western minicomputer.

In a planned economy such as India's documents like manufacturing licences are extremely valuable commodities, and Computronics has a letter of intent for computer equipment manufacture. It is now seeking a suitable product.

"We are interested in manufacturing both in the Seepz free trade zone and outside it. In the latter case we would be looking for a product which would enable 70% of the output to be exported."

Discussions are at an advanced stage with Mael (form-

erly Inset) of Italy on a pilot programme under which Computronics would assemble 300 Mael 2000 or 1000 systems in Seepz for export to Yugoslavia. There are also plans to build 300 Videoplex terminals in Seepz for the Hungarian computer manufacturer Videoton.



ECIL micro under test

THE advent of the microprocessor has led to considerable growth in the variety of Indian-designed mini and microcomputers in development and manufacture. Our picture shows an ECIL Micro-78 microcomputer under test at the

public sector company's plant near Hyderabad. Based on the Intel 8080A microprocessor, the machine shown here is destined for the Indian Institute of Technology in New Delhi, where it will be used for data logging.

Maintenance company plans to diversify

TWO companies were born out of the ashes of IBM India. One, IDM, has become the Iel and Prime agent in India, is running the service bureaux left behind by IBM and, because of the calibre of its IBM-trained staff is respected and accorded a good chance of surviving, and is making a success of its declared aim of Western collaboration (CW, May 24).

Although it maintains an air of supreme self-confidence, the other company carved from the rump of the IBM India business is less highly regarded.

Called Computer Maintenance Corp. CMC, it is in effect the result of nationalisation of IBM's maintenance operations. It has the ambitious target of

handling maintenance of all computers installed in India, and is presently contracted to provide maintenance at 800 installations.

In addition to most of the machines left behind by IBM — the 370/155 at IIT Madras, one or two 300s, scores of 1401s and a few 1130s, 1620s, 7044s and 1800s — it is now under contract to maintain four Digital Equipment machines, two Robotron ES-1040s, three Burroughs machines, three ICL machines and some Inforex equipment.

It also has agreements to provide maintenance on future machines installed by CII, Honeywell Bull, CDC, Iel, Interdata and GCSS.

Now headquartered in

Hyderabad, it has ambitious (some would say unrealistic) plans to diversify into several other fields.

Already it is providing training for users on languages, database systems and communications, and is planning enhancements and modifications to operating systems, and plans to open a bureau in Bombay shortly.

This will be based on the Indian designed and built TDC-316 minicomputer, which CMC also plans to use for software development.

The EEC-hosted delegation of European software companies to India last year highlighted shortage of main memory on the IBM 370/155 at the Indian In-

Reports by Tim Palmer

Bombay company link with Wang

A MARKETING tie-up with Wang and agreements with Rand Information Systems are two of the major coups for India's most ambitious computer entrepreneur Lalit Kanodia, and his company, Datamatics of Bombay.

Even more ambitious are plans, not yet complete, to establish a large-scale offshore data preparation service for US corporations, siting the centre in Bombay and making use of the Indian Ocean satellite to link with the US Telenet packet-switched service and then to customers all over North America.

By skilful use of statistics, Kanodia can make the Indian economy sound like a super-California, and in his view, the potential of the national computer industry puts Silicon Valley in permanent shade.

So it is with relish that he reels off the impressive statistics relating to Wang, notably that it is currently the fifth fastest growing company of any size in the US.

The rigidities of a planned economy throw up some strange anomalies, and one of these is of particular benefit to Datamatics.

"We have already sold three Wang word processors; they are fairly easy to import because they are not classified as com-

puters," says Kanodia. The Indian company is also due to take delivery of two of the powerful new Wang 2200VS machines about now.

Datamatics has agreements with Wang to support their machines in various African countries, notably Nigeria, in Mauritania, and in one or two Middle and Far Eastern countries. It is writing several system software modules for the VS, including a Fortran IV compiler which it hopes will be adopted by Wang.

With 75 analysts and programmers, Datamatics is keen to expand in that major Indian standby, software conversion, and to this end has signed agreements with conversion specialist Rand Information Systems involving conversion work in the UK, the US, France, Israel and Australia. It now wants to start a joint venture with Rand based in India.

More training needed

ALTHOUGH India has a surplus of university-educated manpower, the major computer companies believe that there is still an urgent need for training facilities for data processing personnel. Two of the biggest, Tata Consultancy Services and Computronics, are doing something about it.

"We provided 40,000 man-days of training last year," says Piyush Kohli, managing director of TCS. "We take in 60 to 70 new recruits every year, and spend between 10 and 15% of our total budget on training."

"But it is still not enough, and I am planning to establish a training school separate from the company near Bombay."

Vivek Singhal, president of Computronics is thinking along similar lines. "We are planning to establish a Computronics Institute for Computer Scientists in New Delhi. It will be a private, non-profit-making establishment."

SEMS adds two minis to Solar line

EUROPE's leading minicomputer manufacturer, SEMS of France, has confirmed the continuation of its two parallel mainstream computer lines by following the launch of the Mitra 225 with two new models in the Solar 16 line, which bracket the three current models.

At the top end, the new Solar 16/75 is the first SEMS mini to offer one Megaword of main memory, and is claimed to approach the power of the Digital Equipment PDP-11/70.

Fast memory, with a 375 nanosecond cycle time is available in 32K-word modules, and standard memory with a 625 nanosecond cycle comes in 64 or 128K-word modules. It is built around twin buses which can support up to four input-output processors, and the virtual storage operating system gives the user up to eight virtual partitions, each with a maximum capacity of four Megawords. There is also single and double-precision floating point arithmetic.

Up to four 50 Megabyte disc drives can be attached, and real time, transaction processing and multi-task multiprogramming operating systems are supported. Fortran performance has been doubled over that of the 16/65, and APL performance by 30%. The Polybus offered with Solar machines allows multi-processor configurations to be put together with no theoretical limit on the number.

SEMS is aiming the 16/75 at

the scientific and technical markets, process control and communications applications.

The 16/04 is a replacement for the 16/05, and uses the same CPU. It is extremely compact, coming on two half-width circuit boards, and is offered with 32 or 64K-words of main memory, which can be all RAM or a combination of RAM and programmable read-only memory. Languages now available include real-time Fortran PL/16, real-time Basic and APL.

Base price for a 32K-word 16/04 is 24,000 francs, and for a 16/75 with 64K-words, console and one Megaword memory management system is 174,000 francs.

The Solar line contributes 42% of SEMS turnover, which totalled 525 million francs, about £58 million, in 1978.

The balance is contributed by the Mitra line, which will be extended later this year with a powerful new model built using bit-slice microprocessors.

SEMS is still in process of establishing a UK subsidiary. It is already well-established on the West German market, where the Solar line predominates for historical reasons, and has also formed a Belgian subsidiary.

The UK subsidiary is to be headed by Douglas Mackenzie Bromley, formerly technical director of SEMS Computer Benelux.

Recruiting has been handled from the Thomson-CSF offices in Basingstoke, but SEMS Com-

Computers give a boost to Hitachi profits growth

ORDERS for large-scale computers at Hitachi totalled 292 in 1978-79, up from 208 in the previous year, and helped the company to a 19% growth in turnover in its communications and electronics division to about £1,000 million. The division includes integrated circuits, and a wide variety of other telecommunications and electronic products.

About 20% of the large computers went for export, almost all of them for marketing by Iel as the AS/6. Hitachi hopes to increase the proportion exported, currently 7%, to 20% over the next five years.

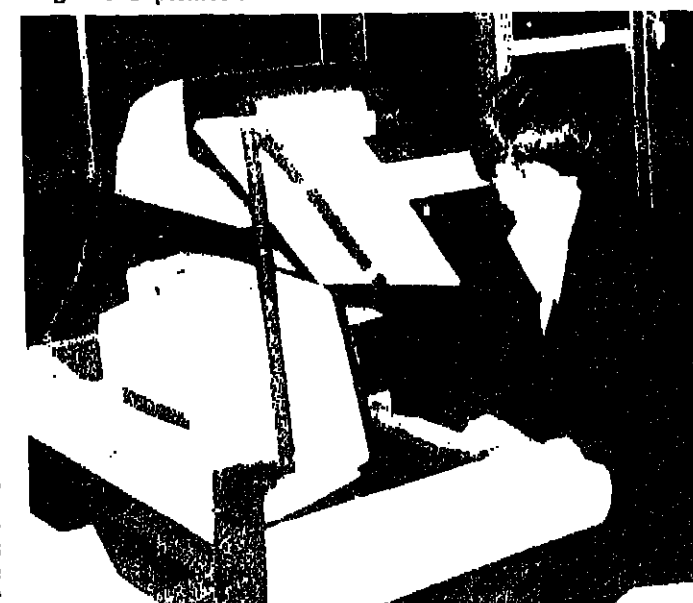
Investment plans for the current year include about £50 mil-

lion for computer and component capacity, the lion's share going to increased output of semiconductors. This is a major export earner for Hitachi, with 24% of its output being sold outside Japan. It already has a small plant in Dallas, Texas, and wants to site a plant in Europe.

Computers and semiconductors are currently the star performers at Hitachi, making a major contribution to the 25% growth in profits to £220 million on turnover up 9% at about £5,000 million.

Overall, the company's business is still strongly Japan-oriented with only 19% of sales being made overseas, down from 20% last year.

puter UK will be headquartered in another, as yet unspecified, location. Staff have been recruited and are currently undergoing training prior to formal inauguration of the company, which is likely to be in August or September.



East-West collaboration

ONE of the most mutually beneficial East-West collaborations in the computer industry is that between SEMS of France and Videoton of Hungary. Videoton manufactures versions of the SEMS Mitra mini line in Hungary under licence, and has collaborated with the French company on software developments. Our picture shows one of the original Videoton products developed around the smallest Mitra mini — a low-cost key-to-disc system. The mini is Videoton's VT60 single-board processor, and if the display looks like a TV set it is no coincidence.

Videoton is one of Eastern

French launch data entry system

A MAJOR new data entry system capable of handling a wide variety of other processing tasks has been introduced by CMC-France. It was designed and is being built in France for the European market. The processor is a 286K-byte Digital Equipment PDP-11/34, and CMC is using Control Data fixed 80 Megabyte drives, up to four of which can be attached.

Up to 32 terminals can be attached to the CMC 7600, and an innovative feature is a multi-protocol, multi-line communications processor.

Based on two Zilog Z80 microprocessors, and developed by CMC in collaboration with the French systems house TIT, the communications processor can support simultaneous transmission on up to eight

lines, and each can use a different synchronous or asynchronous protocol.

Languages on the 7600 are Kobol for real-time transaction processing, and RPG II for batch work. And Kobol is also planned.

CMC-France records more than half the total turnover of CMC-Europe, 153 million francs out of a total of 279 million in 1978.

Although there is some product exchange between CMC-UK and CMC-Europe, the two companies are not financially related. CMC-UK is owned by US minicomputer Microdata, which is currently involved in takeover talks with an unnamed bidder. CMC-Europe has just been bought by Rediffusion of the UK (see Page 1).

INTERNATIONAL NEWS IN BRIEF

Siemens opens a second micro centre in Germany

THE German giant Siemens has shown the importance it attaches to the need for training in the use of microprocessors by opening a second microcomputer training centre in Germany.

Sited in Düsseldorf, it complements the existing centre, opened in Munich in 1976, which already has given courses to over 5,000 users.

Siemens also has training centres in Vienna, Milan, Zürich, Madrid, Brussels, Paris and Scandinavia, and claims to be doing more to train customers in microelectronic techniques than any other organisation in Europe.

Traffic system

BANGKOK traffic congestion is now being monitored and controlled by a micro-based Highwayman system from GEC Traffic Automation. Valued at about £730,000 the system handles 48 road intersections.

£1m Swiss order

THE Union Bank of Switzerland has given Nixdorf one of its biggest orders for the 8864 line of banking terminals. The order is for more than 2,000 systems for installation in the bank's subsidiaries, and is worth over £1 million. It was won in competition with 12 other companies. The Union Bank of Switzerland is also installing an enormous new complement of mainframes from Univac three 1100/82s and an 1100/81, to replace its aged Univac 494s.

NatSemi in Israel

A NEW centre for the design of advanced microprocessors has been opened in Israel by National Semiconductor. The design of its first device, said recently by international vice-president Bob Heikes to be the new 16-bit microprocessor known as the 1600, is expected to be complete by early 1980.

First French user

THE CICS development aid, Intertest, has found its first French user. Texunion, which runs a 370/115 in Roubaix, sold to the company by Sigos-CPP. Intertest now has some 200 users worldwide and is marketed in this country by Circle Computer Consultants (Software File, July 20, 1978).

Personal privacy

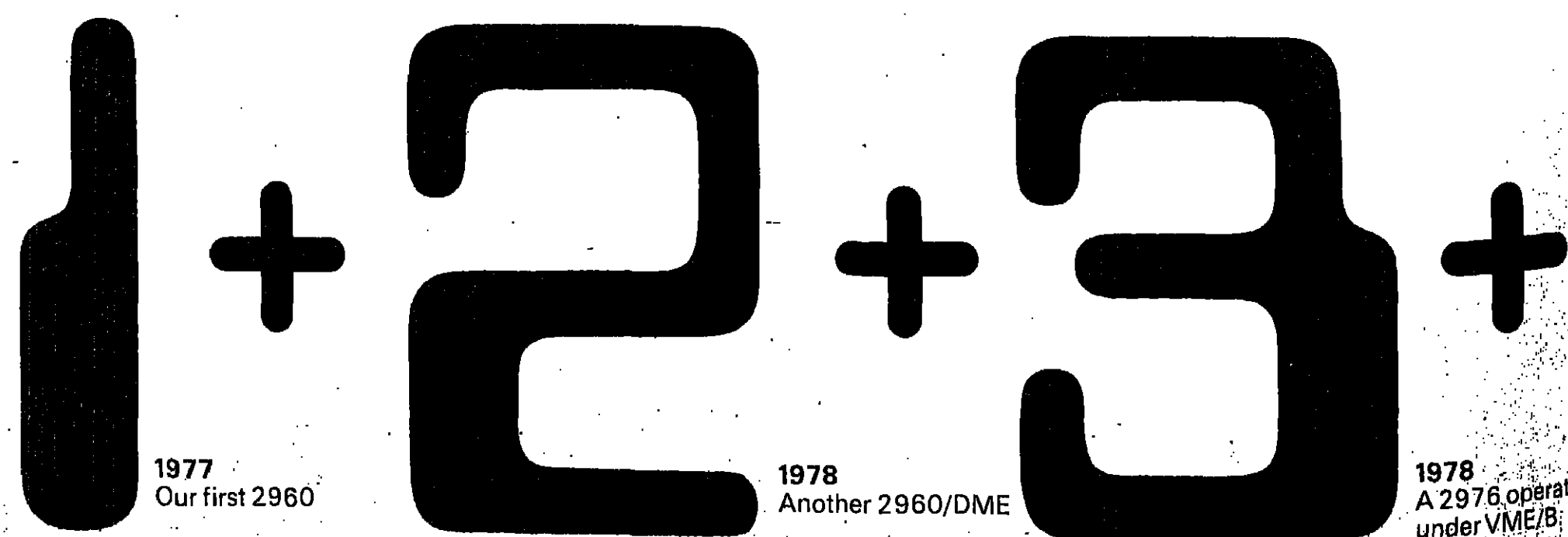
A HARRIS poll in the US has indicated that an increasing number of Americans are worried about invasions of personal privacy. Of the 1,500 people interviewed, 52% felt that existing safeguards over the use of computers were inadequate.

Directory

A 545-page directory of programs used in commercial mining operations since 1970 has been issued by the US Bureau of Mines. It is available from the UK service centre of the National Technical Information Service, price £19.40.

Papuan upgrade

THE national airline of Papua New Guinea, Air Niugini, is to replace its two ICL 2960s with a 2950, and is buying Telecomputing's online transaction processing package TIPS to run on the new machine. Applications to be developed on the new machine include crew management and supply records.



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1978
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1978
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1979
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A massive reserve
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for 2900 Computer services computel

The US market for computers in general, and in particular for small systems, is so vast that it can provide enough business for a manufacturer with the right product to grow big quickly, without even looking for sales in Europe.

One firm that grew to nearly £40 million in turnover before actively seeking European representation is Qantel Corp of Hayward, California, a company that claims to outsell NCR now in the small interactive business systems market in the US.

Qantel systems have been sold in Europe for about four years, but only in

the Netherlands and on a very limited basis in West Germany. However, the firm has now acquired a network of distributors covering most of Western Europe and is looking for substantial sales from established computer equipment suppliers like its UK distributor, General Computer Systems.

Factors that have contributed to Qantel's success to date include user oriented software, low cost marketing through carefully selected distributors and the leadership of the firm's president, Doug Baker, a Canadian who has transformed the California company over the last five years from a small terminal manufacturer into a

major contender in the commercial systems market.

Baker knows more than most about this business, having taken Management Assistance Inc into the interactive commercial systems market in the early 1970s by setting up Basic/Four Corp before moving to Qantel late in 1973 with the mission of doing a similar job — only better.

Here, Baker talks to Keith Jones of Computer Weekly about the past, present and future of Qantel and makes some interesting predictions about how hardware and software will develop over the next few years.



Doug Baker (right), president of Qantel Corp, talks to Keith Jones, Computer Weekly, outside Qantel's headquarters at Hayward, Calif.

Qantel poised to repeat success in European market

"THERE is one inviolate rule in Qantel — no hardware or software will ever be made obsolete."

Doug Baker expressed this commitment as a computer marketing man whose experience goes back to the 1960s when the computer business was very much manufacturer oriented. At that time he was selling accounting machines for a Canadian firm called SCM Corp which was later taken over by CDC.

"In the 1960s the customers of the computer firms that dominated the market then got

half as much as they wanted for twice as much as they expected."

Baker promised, "In two years Qantel will offer 16 Megabytes of main memory to its new and existing customers and they will be able to use up to 100 display terminals because the 16 Megabytes will eliminate contention."

Qantel's system design philosophy already weighs in favour of large memory capacities and dedicated user partitions rather than program swapping. The top end machine in the Qantel family, the 1450, already comes with

up to one Megabyte as standard.

Asked about the processing capacity needed to utilise 16 Megabytes, Baker commented, "Our systems will have several processors by then and the 16-bit word length of our CPU is all that is needed in a commercial machine. Most of the work involves file transfers. The computation side is trivial."

Looking at another customer-oriented development just over the horizon, Baker explained, "The next major step is to eliminate downtime by the redundancy of intelligence. This dynamic redundancy will in-

crease the load on the rest of the electronics and degrade the performance of the system when something fails, but the machine will not go down. We know that we can achieve it and I am sure that it is essential for our survival in the small systems business, because it will enable service calls to be optimised."

"When Qantel was in the terminal business it needed 80 service sites in the US to maintain equipment at remote locations." Looking at software developments, Baker saw Qantel's recently acquired business planning system, Qicplan, as extremely important for remaining competitive.

"At the moment small business computers normally just report history, but in two years from now," Baker asserted, "nobody will buy a business computer without planning tools."

Qicplan, along with most of the applications software for Qantel systems, was developed outside the company, but Qantel itself has worked on its two essential software products, the Qicbasic compiler and the Best disc operating system, since September 1973 when Baker joined the firm.

"At Qantel we avoided what I am sure were mistakes made at Basic/Four. For example, Basic/Four adopted the indexed sequential file access method while at Qantel we went for the tree structured method."

About 35 of Qantel's directly employed workforce of 800 are currently involved with software development.

On the manufacturing side, the firm buys in all the peripheral units incorporated in

its systems, including disc drives from CDC and the Texan company, Western Dynex, and printers from Centronics and Teletype Corp, but Baker estimates that Qantel itself adds about 50% to the final value of the hardware.

The company builds its own controller, memory and PC boards, and its IC suppliers include Hitachi and NEC of Japan for 4K and 16K RAM chips. The ubiquitous AMD 2900 bit-slice processor chip set is now used in all Qantel models apart from the smallest machine, the desktop 210, which is configured around a Zilog Z80 8-bit microprocessor.

All manufacturing used to be based at Hayward until about a year ago, when a plant was opened in Puerto Rico, a location selected, according to Baker, because talented and industrious labour was readily available, and not because it was cheap. "Puerto Rico has the same minimum wage as the US," Baker pointed out.

The Puerto Rico operation is to be further expanded to help meet a growth in sales from \$36 million in 1978 to what Baker conservatively estimated will be a \$50 million turnover this year.

Qantel has been profitable since 1975, and the company's health is particularly important to Doug Baker because he has a substantial holding in the company — one of the reasons he was lured away from MAI, where he had no ownership.

Other major Qantel shareholders include Teledyne, a \$2 billion conglomerate that also owns 20% of Litton Industries, Arthur Rock and Co, the organisation that financed the

launch of Intel, and the Bank of America, the biggest bank in the world. About 200 Qantel employees also hold stock in their firm.

The company provides assistance for about half its distributors and also operates quite a lot of money looking suitable international distributors.

Qantel took a stand at the Hannover Fair earlier this year, specifically with the aim of making such contacts, and company spent \$70,000 at the National Computing Conference in New York for the same reason.

About 50 Qantel systems have been installed in the Netherlands over the last four years, and 40 in West Germany. Baker's Dutch based distributor, the Dutch based distributor, explained, "Baker approached us, rather than finding them, because at the time we were still establishing ourselves in the US. Frankly, I am not happy about the German operation at the moment, but we hope to do something about that."

Qantel's European operations now take in most countries including Sweden, where Qicplan is being sold by Altec, a Swedish subsidiary.

Qantel is already established in a number of European markets such as Australia, where more than 20 machines have been installed, and New Zealand, where there are more than 60 installations. The potentially huge Japanese market is now being entered through C. Itoh Data Systems, one of the biggest computer equipment marketing organisations in that country.

Management reporting system Qicplan seen as 'winner'

QANTEL is fully aware that effective software is the vital ingredient in any formula for survival in the commercial systems market these days, and the company already offers a group of applications packages called Solutions and a report generation system called, predictably, Report Generator.

Qantel now believes that it is on to a winner with Qicplan, a management reporting system developed in Australia by Quickplan Inc, a small Sydney software house that originally developed the system for Wang computers but which has now sold the exclusive worldwide marketing rights to Qantel.

Quickplan's managing director, Chris Murray, who now spends a great deal of his time with Qantel at Hayward, explained that Qicplan is a full scale database management system with a hierarchical database structure similar to Total, but that its main purpose was management reporting.

Qantel's UK distributor, GCS, expects to charge about £3,000 for Qicplan and, according to Murray, it is far easier, as well as far cheaper, to use than similar packages available on a sharing basis or on in-house mainframe systems, like IBM's Plancode.

Murray pointed out that Qicplan only needs 16K bytes per user on a Qantel 1450 machine compared with the 100K per user taken up by Plancode on an IBM mainframe.

Even more important, perhaps, is that Qicplan models can be programmed using a very simple forms technique, rather than by using complicated compiled languages.

Qicplan has been used by some companies in Australia for up to three years and customers include merchant bankers Hill-Sampson, Wellcome Australia, the Australian subsidiary of the UK insurance conglomerate, and the largest consulting engineering firm in Australia, MacDonald-Warman.

Sofia centre of telecoms development

IN the countries of East Europe, the members of the Comecon economic grouping, computer production and software development is now regarded firmly as a co-operative effort, supported by a high level of detailed planning and control.

The political core for this co-operation is the Central Committee for ES Production chaired by Professor Ilarionov, a corresponding member of the USSR Academy of Sciences.

Each Comecon country has its member and meetings are held twice yearly, by turn, in each member state. This is planning at its highest level which results in decisions on what is made and where.

A galaxy of sub-committees, meeting more frequently, supply the detailed information and control over hardware and software developments, systems, communications, external devices and, at the sharp end, production targets, material supply and labour requirements for the individual factories.

The ES1000 series is the major current development. This is also referred to as the Rjad unified range of mainframes, but I found that, at least in Bulgaria, this title is never used. Due to peculiarities in the Cyrillic alphabet the series is sometimes spoken of as the EC range, to add to the confusion. The ES machines were designed after the IBM 360/370 and will accept much IBM software without change.

A disc operating system essentially like DOS is found on the smaller machines of the range, ES1010 and ES1020, with OS/ES having the facilities of SVS on the larger machines up to ES1065.

Bulgaria's share in mainframe production lies in the medium range including ES1020, 1022, 1033 and 1035. The first two machines are equivalent to IBM 360/40 and have been in production since the early 70s at the modern and substantial plant, ISOT, situated on the outskirts of Sofia.

The ES1033/5 is its latest contribution and has marked similarities to the 370 series. Initial deliveries will be made within Bulgaria as replacements for its ageing ICL and other machines.

Two organisations I visited, the Institute for Organisation, Economics and Management of Construction, which runs an ICL System 4/50, and the Academy of Social Science and an ICL 1804A, expect ES1035 (or larger ES1045) replacements shortly. The Mechano-Electro-Technical Institute, also in Sofia, expects to replace its three ES1020s with ES1033s or ES1035s later this year.

As with the mainframes, peripheral and component production is also allocated among Comecon countries. Bulgaria's ISOT is responsible specially for storage devices and produces disc and magnetic tape transports for the entire ES range. The specialisation is carried through to other member states. All the newer VDUs I saw were manufactured by Videoton in Hungary and all the line printers, for the ES series, by Elwro at Wroclaw in Poland.

Most interesting for me were the software tasks for Bulgaria. Sofia is apparently the centre for communications developments, and this includes not only use of the IS series but also the new SM series of minicomputers that are to replace the bottom end of the ES range.

The SM4 is the largest of these and has been designed and manufactured as a communications processor by Elorg in the USSR. It uses LSI and is said to be comparable with Prime 300 or the Milre 125. Smaller versions, the SM1, 2 and 3, are manufactured in East Germany, again to Russian design.

The Institute of Computing Techniques in Sofia is the premier institute for communication software development. It is a large concern and responsible for much of the manufacturing design for storage devices produced at ISOT.

Under its director, Dr Zhivko Zhelezov, it has recently been given the task of setting up an experimental packet-switched network using the ES1022 as host and SM4 as node computers. It is a fairly modest affair with three nodes and four host computers together with an unspecified number of terminals. The problems they are meeting lie in the operating system software for the ES range, which does not contain a mechanism for transfer of files in a network environment. Neither is the linking hardware very suitable. At present the system in the host permits the link to look like a terminal operating at maximum speed of 2,400 bauds.

Another body within Sofia which is actively engaged in network design is the Ministry of Posts and Telecommunications. A specialist working party has been set up, whose task is to initiate a national packet-switching network on the lines of the Post Office PSS.

Talks have been carried out with the French organisation Transpac but not, apparently, with UK Post Office officials. The initial purpose of the network will be to link the 27 districts of Bulgaria, corresponding to UK county councils, with terminals and host computers. The communications processor proposed is again an SM4, and some spin-off from the work of the Institute of Computing Techniques is expected. One major problem is the state of public telephone lines in Bulgaria, which is down to 1.2K bytes for switchable lines.

Centralised planning is, of course, no new experience for Bulgaria. I met several examples during my visit. One of the most striking is the Institute for Organisation, Economics and Management of Construction which is part of the Ministry of Construction and Buildings.

Its computing centre provides the planning resource for management and design and is also seen as a model for the introduction of computer-based management systems into the construction industry. The centre itself contains an IBM 370/175, and an IBM 2705 communications processor, and is supported by a Danish RC3600 edit system. An ICL 550 is still running there but is due to be

replaced by an ES1035.

Applications software is dominated by finite element work, most of which is written by the centre's staff. Packages in use include Genesys, IBM Isis and a Pert-like system. Compilers used are Fortran, Cobol and PL/I.

Much effort is spent on programs to solve particular problems in structural engineering, such as stresses in roads, bridges and dams, wind effects on buildings and earth tremor analysis — this latter of much interest to Bulgaria's neighbours in the earthquake zone.

Information control and dissemination is seen as the key to most of the technological and social developments required by the modern state.

Sofia is the home of one of the largest organisations of this kind in Eastern Europe. The National System for Scientific and Technical Information contains as part of its function the Central Institute for Scientific Information and Management (CISTI). CISTI assists in co-

operation of computer work for Bulgarian scientific organisations, supplies technical and scientific information at all levels and, most important of all, runs an automatic system of information processing, storage and retrieval.

At present it runs an IBM 370/165 with rented IBM software. The database is compounded from many sources. It includes Compendex from New York, Biosis from Philadelphia, Inspec from London, Inis and Agric from Vienna, and ICST

and Viniti from Moscow. Negotiations are also currently being carried out to link the source of Inis (nuclear data) and Agric (agricultural data), both located in Vienna, with CISTI via the International Research Centre at Laxenburg near Vienna (IIASA) so that data exchange as well as updating can take place. This is a long-term project and likely to involve the Institute of Computing Techniques which holds the central role in network development.

Poland and described the emerging computer industry in the Eastern European countries in a Computer Weekly article, The Wind of Change Blows in Poland (CW, June 17, 1979).

Now, three years later, during a second visit to another Comecon country, Bul-

garia, he has found it even more difficult to separate developments there from the general situation in Eastern Europe: computer production and planning in Bulgaria form part of the overall Comecon effort.

Dr Beauchamp is director of computing services at Lancaster University.



Panoramic view of Sofia, the capital of Bulgaria.

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S. Africa sets up DP school

A COMPUTING school has been set up in South Africa to help combat the acute shortage of programmers.

Called Impala Computing, the school has been established by Greek computer specialist Dino Aravindinos and runs four-month courses designed to teach the student the main aspects of programming, including hands-on experience on an IBM System 34.

Aravindinos claims that his school is the only one of its kind in South Africa, and that "the students are supervised by another student who proved himself in the previous month's intake and who is further overseen by highly qualified tutors."

Attributing the country's massive shortfall of trained programmers to emigration — particularly to Australia and Canada — and to local companies which are not prepared to employ inexperienced people and train them, Aravindinos suggests that his school will alter the situation by giving students the skills required.

Applicants for enrolment at the multi-racial school are put through a pre-selection course.

Mark III centres

GEISCO has added two more centres to its Mark III time sharing service, in Riyadh, Saudi Arabia, and Caracas, Venezuela. The Riyadh centre takes the form of a walk-in bureau, but access to the service by local telephone call is now possible from over 600 cities in 24 countries. Other Venezuelan cities will gain centres next year.

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COMPUTER WEEKLY INTERNATIONAL

New Zealand claims world's biggest 2900

THE New Zealand government is due to become, once again, the proud possessor of the biggest ICL 2900 in the world.

Over the next few months, the 2980 at the Trentham computer centre, in Wellington, will get a £2 million upgrade to a dual processor, despite pressure on the government to prune spending. Many other upgrade requests are expected to be deferred by the government.

Trentham is one of the government's four major installations, each handling the requirements of several departments — and each, incidentally, supplied by a different manufacturer. New Zealand central government might be seen to be "hedging its bets" in hardware, with processors from IBM, ICL, Burroughs and Univac.

The 2980 already processes work for the

Agriculture and Fisheries, Forestry, Statistics and Scientific and Industrial Research departments. The rapid growth of this workload is the prime motive for the upgrade, says Trentham centre manager Brian Gibson.

Under development, however, is an online system for the Customs Department, which will become one of the centre's major applications in the early 1980s. This will use the latest version of the IDMS database system, with its teleprocessing enhancements, running under the 5X32 version of the VME/B operating system.

Operation under 5X32 will start on the new processor when this goes live in mid-July. For about three months the configuration will run in "twi" mode, with the older processor still running the 5X27 release.

Dual running under 5X32 is expected to begin in November.

Besides the second order code processor, the 2980 will get a memory upgrade to almost 8 Mbytes, and more EDS 200 discs and tape units.

Approval of the Trentham request indicates the importance attached to the work of the centre, says Gibson. In particular, trade statistics to be available from the Customs system will be far more accurate and up-to-date than those published previously.

The 2980 was the largest in the world when originally installed, but was soon overtaken. ICL has confirmed that with the latest upgrade, Trentham regains its leading position.

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Aerospace firm bids for Microdata

AFTER losing out to Northern Telecom in its bid to acquire control of Data 100 (CW, May 23, 1978), US aerospace giant McDonnell Douglas has declared as one of the suitors for US minimaker Microdata Corp.

ITT, one of the suitors already identified by Computer Weekly (July 5), has pulled out of the bidding following a sharp decline in the Microdata share price. McDonnell Douglas, maker of the ill-fated DC10 airliner, has interests in process control, digital telephone equipment and medical instruments, and is keen to get into the mainstream of the computer business.

ITT withdrew last week after the Microdata share price reached \$30.50, some \$5 higher than when negotiations started. It is keen to expand its interests in the automated office business, but although it succeeded in acquiring daisywheel printer specialist Qume, also lost out. AM International in its bid to acquire Jacques Systems (CW, December 21, 1978).

Another possible contender for Microdata is Xerox Corp. Microdata owns CMC-UK.



Into Arab territory

CONSISTENTLY big exporters, Redifon Computers has installed its data entry systems in some exotic locations. And the company has been quick off the mark in the Persian Gulf. Our picture shows a Redifon R850 system installed at the Qatar Petroleum Production Authority in Doha, Qatar. It will prepare tapes for processing on an IBM 370/115 mainframe at Petroleum Development, Oman and the R850 handles invoicing, materials control, salaries, general accounting and personnel.

Redifon has also sold its first R850 in the USSR. The customer is V/O Prodnitro, which will use the system for administering its food import-export business, which includes caviar, tinned fish, thoroughbred horses, pedigree cattle and zoo animals.

Threat to 23,000 jobs in Canada

TRANSBORDER data flow could cause the loss of 23,000 data processing jobs in Canada by 1985, mainly because an increasing number of US-based companies will hold files on large scale systems at head office instead of on smaller computers at their Canadian subsidiaries.

This prediction has been made in a report by the Canadian Consultative Committee on the Implications of Telecommunications for Canadian Sovereignty. The report also warns that various kinds of data will be placed beyond the protection of Canada's privacy and freedom of information laws, and sees the danger of computer crime deterrence and detection being reduced in effectiveness.

In addition, it warns that the greater use of US and other foreign computing services could undermine domestic control over disruptions caused by strikes.

Another danger that the

report foresees is a greater dependence on foreign technicians which could reduce the overall pressure to develop computer systems for domestic needs.

Canada's domestic telecommunications system could also be neglected, according to the report, by data being imported into Canada via foreign owned satellites and rooftop antennas.

One way of creating a lot of new data processing jobs, according to the report, could be the heavy promotion of Teldon, the Canadian government's videotex service (CW, April 12).

Itel offers most powerful mainframe

From page 17
processor is being serviced. This is not at present possible on IBM's attached processor systems.

Performance of the AS/7 is claimed to match or exceed that of the IBM 3033, so that Itel now has a complete range of large-scale systems offering a power range considerably greater than that offered by IBM's 303X line.

The channelsubsystem for the AS/6 and AS/7 has also been enhanced, and in particular now supports IBM's new 3370 disc storage subsystem. The 3370, announced with the 4300, provides 570 Megabytes per spindle, making it the biggest drive currently offered by IBM.

The European announcements from Itel are completed

by formal launch of the IPL Systems Model II and III IBM-compatible processors (CW, June 14). These machines are the top two models in the line marketed in the US by Control Data as the Omega 480.

Itel calls the machines the AS/7020 and AS/7030, and they are offered as direct alternatives to the IBM 4341. The 7020 is claimed to match the power of the 4341, while the 7030, offered as a field upgrade, provides 40 to 50% better performance, and main memory of up to eight Megabytes, double that on the 4341.

Full microcode assists for VM/370 and OS/VS1 are included in the two models, and Itel promises to provide a DOS/VSE Assist within one year of

IBM making its first European delivery of this product.

West Germany is a bright spot in the financial gloom surrounding Itel's business. Citing the speed with which Itel was

able to come up with the answer to the E-series, Itel Germany expects to report a 50% increase in turnover for the first half of 1979, just closed, to around DM 30 million.

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Appointments

Appointments

Appointments

THE INDUSTRY NEWSPAPER FOR DP PROFESSIONALS

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Classified Department, Dorset House, Stamford St, London SE1 1UL

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Classified Rates: £10.00 per line per week. 7 - 19.00 10 - 18.00 20 - 17.00 50 - 15.00

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Joining a specialist software department the person appointed will lead small teams of technicians currently developing a range of advanced software products. Liaising closely with Technical Support and User areas to interpret requirements the successful candidate will participate in the design and specification of future software products in addition to identifying improvement potential in existing systems.

Applicants will offer over seven years' sound software experience coupled with an in-depth knowledge of Assembler and DOS operating system. They should be capable of working to high levels of achievement in a demanding environment requiring innovative and commercially practical solutions to systems development issues for which a dedicated range of 370 and 4331 equipment is currently installed on site.

To cope with the ever-increasing demand for its products and to maintain its unique position in the software field the Company has ambitious expansion plans, thus offering the person appointed, considerable scope for career advancement. Successful candidates will receive full training in the Company's products and will be offered first-class conditions of employment and a commencing salary in the range of £9000-£11000. A company car will be provided and generous relocation expenses are available where appropriate.

Ref: SI/1907

ANALYST PROGRAMMER AND PROGRAMMER OPPORTUNITIES

NEAR WINDSOR

TO £7000

Our client, a successful manufacturing company is at present undertaking the development of several new on-line application systems and now wishes to recruit analyst programmers and programmers with the potential to develop into the analyst programmer role in the future.

If you can offer:

- * A minimum of eighteen months commercial COBOL programming experience.
- * Some experience of systems analysis and design or a strong desire to progress into this work.
- * The drive and enthusiasm to succeed in a project oriented environment.

The company can offer:

- * Training in advanced IBM software.
- * Experience of a variety of applications projects.
- * Development of COBOL programs utilising database and teleprocessing.
- * Excellent starting salary and conditions of employment.
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This is a very attractive opportunity to join a professional progressive thinking data processing development team.

Reference: NW1/1907

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Two important opportunities have arisen with our client, an International leader in the field of radio navigational software and hardware development utilising micro-processors.

SOFTWARE PROJECT LEADER c £9000

Candidates for this position should be able to demonstrate proven software project leadership skills and will be offered the opportunity to lead a team developing a major new product. The ability to relate the software to the hardware will be a great asset in this role.

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If you are able to offer at least two years' experience of a real-time high level language ideally CORAL 86 or ALGOL, then this is an excellent opportunity to join the software development of significant new products in the radio navigational systems area.

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Reference: NW2/1907

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JBA

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Scandinavia up to £16,000 package
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Applicants must have at least two years communications experience preferably on IBM equipment such as 3033, 3705, 4300 using SNA. As an alternative the company would consider candidates with a background of IBM Software e.g. MVS, CICS related to communication systems.
Excellent opportunity to work in Scandinavia on new technology projects.
Contact: Jim Baker

Real-time Communications

Richmond & Europe Salaries to £9,000 + benefits
Rand Information Systems Ltd., a highly profitable systems house have taken a recent decision to expand their communications systems software business. They are currently carrying out a specific feasibility and design study on behalf of an international company for a large communications network. The initial positions being created for this and other projects are:

- * TECHNICAL CONSULTANTS - with upwards of 5 years software design and implementation experience.
- * SPECIALIST PROGRAMMER/ANALYSTS - with between 3-5 years, preferably real-time software design experience.
- * PROGRAMMERS - probably Graduates, with around 18 months experience in this field.

Above average salaries are offered, in a generous remuneration package which includes free life insurance, BUPA and non-contributory pension.
Contact: Andy Wright

Message Switch Development

City Based to £7,000 neg.
Opportunities exist for Assembler level programmers to join a small team of software specialists, working on communications networks. Candidates should be familiar with the design and programming of message switch applications on a mini computer or a micro-based system.
Graduates with limited experience will be considered for trainee positions.
This is an excellent opportunity to work on new technology including micros.
Contact: Margaret Stevens

For further information on any of the above vacancies, please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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A very attractive prospect for career-minded Analysts, keen to progress in a growth-orientated modern company putting in database and TP systems, promising exciting design and development work well into the 1980's.
We are keen to hear from Analysts who have a sound business background, a good knowledge of COBOL and experience of system design over two to three years, ideally in an accounting, financial or banking environment.
Contact: Mike Creamer

Programmers & Analyst/Progs.

South Midlands up to £6,500
We have been retained by a well known manufacturing organisation to recruit a number of Analyst/Programmers and Programmers to work on the development of commercial systems in a dynamic and expanding environment.
There are vacancies at several levels but all applicants must have a sound background of COBOL on a mainframe, (at least one year for the junior positions and three years for the more senior posts) in commercial applications preferably manufacturing, stock control or accounting.
This is a real opportunity to work in a friendly and professional installation. Salaries are negotiable according to experience. Relocation assistance available where appropriate.
Contact: Jim Baker

PDP 11/BASIC + Programmers

Mid-East Beds. to £8,000 p.a.
One of the few U.K. construction companies to have increased profitability over the past year, has two vacancies for experienced RSTS/E BASIC + programmers to join its buoyant, expanding d.p. department. The kit consists of both an 11/80 and an 11/35 - the latter used almost entirely for development, with each technician having a dedicated work station.
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Contact: Andy Wright

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The positions available are varied, and will at times involve visits to customers in all countries in which SDI operates - Europe, USA, Canada and Australia - in support of our development programme and marketing effort.

Current vacancies are:

1. Technical Writer: who will primarily be responsible for updating user and internal documentation for existing products as well as the creation of user and internal manuals for new products, using a computer based text processing system.
2. Technical Services Officers: who will provide technical and marketing assistance to the world-wide marketing organisation, as well as creating and controlling the various internal training schemes and procedures currently running in the Development Centre.

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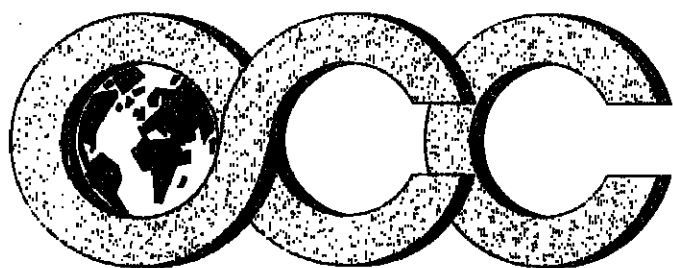
If you possess some or all of the following skills and abilities:

- Are a bright self-starting individual able to get on with the job with minimum supervision.
- Consider yourself to have a good understanding of DOS/VS and IBM System/370.
- Have had some programming experience (Systems or application).
- Have had some experience with GRASP or GRASP VS (desirable but not a pre-requisite).
- Have had some operating experience (desirable but not a pre-requisite).

then why not call Robin Bailey on High Wycombe (0494) 20947 between 09.00 and 17.30 weekdays to find out how SDI can help your career, or complete the coupon and send it to: SDI, PO Box 84, High Wycombe, Bucks.

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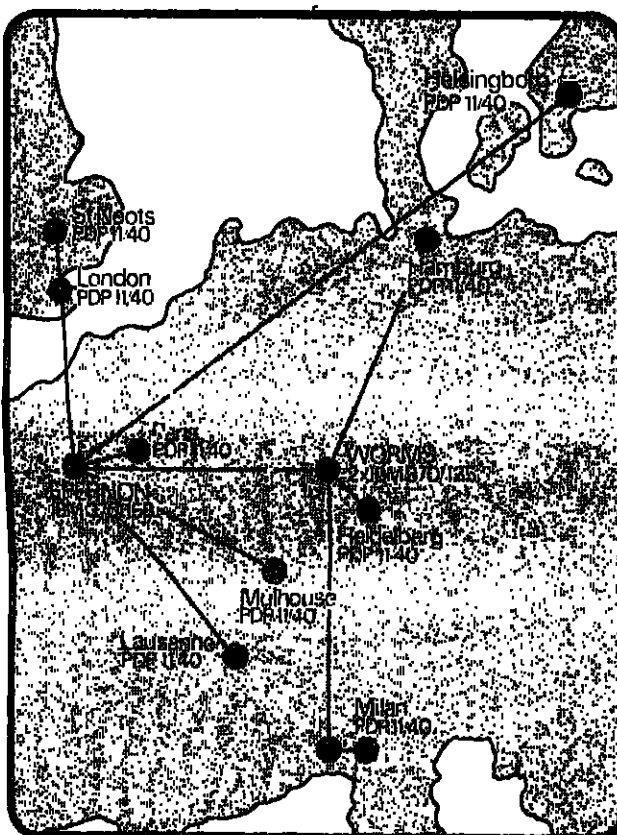
The person appointed will take charge of all hardware and software matters relating to the mainframes at both data centres; the terminal computers; and the TP network. The functions include: evaluation of hardware and software alternatives; trend analyses; performance monitoring; development of standards and procedures; day to day software support with a team of systems programmers. The current hardware is shown on the map, but a major upgrade is planned for the near future, involving 2 x IBM 4341's at Epernon and 2 x IBM 4341's at Worms to replace the IBM 370's, and 13 x IBM 8100's to replace the PDP 11's. The software environment includes DOS/VS, POWER/VS, VM, DL1, CICS, etc on the mainframes and RSX11M, DECNET and SERIES IV on the PDP 11's.

Candidates must be thoroughly competent technicians in the appropriate fields and must also have excellent managerial skills. The position will involve travel between the various sites in Europe and candidates need the personality which will allow them to cope with the pressures involved. English is the working language, but knowledge of a European language would obviously be beneficial.

Client interviews will take place at our offices on Tuesday 14th and Wednesday 15th August. Final interviews will take place at Epernon or Worms soon after.

Please ring Neville John on 01-242 9356 (day) or write to the address below, quoting ref: 748/CW/INJ. If it would be more convenient to telephone in the evening or during the weekend, ring Farnborough (Kent) 52880.

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The City Council operates an ICL System 4/50 and a Univac 1100 with terminal network on a two-shift basis. We now require the following staff to work in the operations area

Computer Operator

£6285-£8769 (under review) Grade AP4 (Ref: MS21)
The successful candidate will preferably be an experienced System 4 operator, but a Univac 1100 or IBM background would be considered. Minimum requirements are 5 'O' levels (including English and Maths) and 3 years' experience in computer operating.

Junior Computer Operator

£4407-£8002 (under review) Grade AP1 (Ref: MS22)
The successful candidate will preferably have at least 5 'O' levels (including Maths and English) or one year's experience of data processing. He/she will also be expected to have a basic understanding of the work areas a computer could be used for within a Local Authority.

Both these posts are in a career progression scheme where advancement is based on performance, experience and achievement. Training will be given where appropriate.

There are excellent benefits including:

- up to 24 days' annual leave, PLUS an extra day off every four weeks
- interest-free annual season ticket loan
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To obtain application form please send postcard, telephone or call at the Personnel Management Division (quoting appropriate reference number), PO Box 240, WESTMINSTER CITY COUNCIL, City Hall, Victoria Street SW1E 6QP, telephone number 01-534 5555 (9.30am-5.30pm service). Closing date 2nd July, 1979.

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THE JOB will involve teaching Programming and Data Processing HND and Degree level

THE PERSON should have recent practical experience in Computing and/or a degree in Computer Science. Previous teaching experience would be of considerable advantage.

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To run a new PDP11/70 installation

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It is an ideal opportunity for men and women who are at present Chief or Senior Operators and are now looking for more responsibility and a new challenge.

PDP 1100 under RSTS is required and a grounding in BASIC + would also be desirable, but as an added attraction to the jobs, training in BASIC + programming will be given.

Salary will be negotiable up to £6000 per annum and our client is also offering membership of the pension scheme and staff restaurant facilities with a three-course meal for only 20p.

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We have vacancies for two Computer Programmers. Ideally applicants should have knowledge and practical experience of commercial programming particularly in COBOL, or a degree in computer science. However we will consider applications from graduates in other preferably related disciplines who can demonstrate a keen interest in a career in computers.

We offer an attractive salary coupled with conditions commensurate with a large and successful company.

Please contact Mr. D. G. Dewick, Assistant Personnel Officer, Brush Electrical Machines Limited, P.O. Box 18, Falcon Works, Loughborough, Leicestershire. Telephone Loughborough 63131 ext. 64.

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Salary up to £8189 p.a. (at present under review)

Vacancies exist for experienced programmers to work in the Data Processing development team. The latest NCR Criterion range of 1M byte 8580 computer with large disks, fast tapes, and terminals, providing virtual storage and interactive programmes facilities is now installed.

A wide range of applications are in use, serving the needs of most departments within the County Council. The schedule of new development looks towards the further growth of the on-line and information systems work.

Candidates should have had one year's successful programming experience, preferably in COBOL.

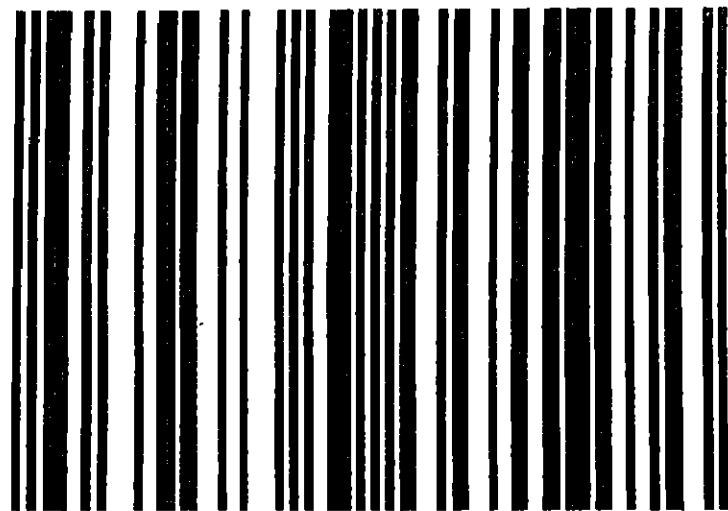
We offer a parallel career development for Programmers and Analysts with a progression scheme to accelerate you through the salary scales.

Generous holidays, an attractive contributory pension scheme with a wide range of benefits, ideal working conditions — new offices and staff restaurant — and a range of sporting facilities.

Removal, disturbance and lodging allowances payable in approved circumstances and assistance with housing may be given.

Applications (no forms), giving full details of past experience, age, and present salary, should be addressed to the County Treasurer, County Hall, Hertford, Hertfordshire, SG10 1BQ, by 30 July, 1979.

Before specialising in
a particular area
of computer science
you should have a
broad knowledge of
the fundamentals of
computer science and
its applications.



To cope with the demands of our Electronic Point of Sale Project (EPOS), we require Programmers at all levels. Ideally you will have a minimum of one year's IBM experience with COBOL or Assembler.

Salaries will be within the range £5,000 p.a. to £7,500 p.a. and fringe benefits are those that you would normally associate with a large Company.

We are based in Cheshunt, 35 minutes from the centre of London, and where necessary we will help with relocation expenses.

For more information about these positions contact Fred Rayers, Computer Services Manager, Tesco Stores Ltd., Delamare Road, Cheshunt, Herts. EN8 9SL. Telephone: Waltham Cross 32222.

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The appointment will be made within a salary range of £4110 to £6035 (currently under review) plus a payment under a Self-Financing Productivity Scheme of between £10 and £15 per month.

The Laboratories are situated in a pleasant part of Surrey and offer attractive Conditions of Service, and facilities for the total of 800 Research and Support Staff engaged in a broad spectrum of research into the materials, technologies and plant performance problems of the Central Electricity Generating Board.

Application forms are obtainable from the Head of Personnel Development & Services, Central Electricity Research Laboratories, Kelvin Avenue, Leatherhead, Surrey KT22 7SE or telephone Leatherhead 74488 Ext. 363, quoting reference number **RL/37/CW**. Closing date is: **Friday 3rd August, 1979.**

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OFFICER**

The NERC Central Computing Group has a vacancy for an Assistant Scientific Officer to work at the Rutherford Laboratory, Chilton, near Didcot, Oxon. The post will involve providing general user support for the Univac computer. Specific responsibilities include support of existing major software systems, fault finding and job tracking when problems arise.

Minimum educational qualifications for appointment are 4 OCE O Level passes including English Language and a Scientific/Mathematical subject. Candidates should normally be under 26, years of age on 31st December, 1979. Salaries: £3,076 p.a. at age 18 rising to £3,990 p.a. at age 21. £3,188 p.a. at age 22 rising to £3,618 p.a. at age 24 (at 1 August, 1979). These scales will be revised in January, 1980.

Daily travel facilities are available from the Rutherford Laboratory to most of the neighbouring towns and villages. Resident and recreational facilities are provided.

Staff of the Council are not Civil Servants but enjoy pay and conditions of service comparable to Civil Servants.

Application forms may be obtained from Ken Young at NERC, Polaris House, North Star Avenue, Bexendon (Tel. 0793-40101). Completed application forms should be returned by 10th August, 1979.

CAPITAL APPTS.

GRADUATES

Urgently required in Training positions: Industrial, Scientific and Commercial situations.

SALARIES: £13,000 ALL AREAS

324 Wickham Hill, 01-557 441/436 9659 ext.

**South Eastern
Health Board**

SENIOR PROGRAMMER—GRADE V

The health board's data processing is based on an I.C.L. 2903 48K computer located in Kilkenny City, in the south east of Ireland.

The primary responsibilities of the job will be the supervision of the Board's programming activities and the training and development of the Board's programming staff.

The minimum requirement for the job is:
At least two years experience in programming in Cobol using D.A., a sound knowledge of I.C.L. software and of modular programming would be desirable.

Starting salary is in the range of £5,284-£5,996 (under review) and the Board will assist with interview and removal expenses.

Special interview arrangements will be made for U.K. applicants.

Application forms and particulars are available from:
**The Personnel Officer,
Arus Stalme,
11 Patrick Street,
Kilkenny,
Ireland
Telephone (056) 21702.**

to whom completed application forms should be returned not later than 5.00 p.m. on Tuesday 31st July, 1979.

Outstanding New DP Opportunities at all levels

Rural South of England

Starting Salaries between £8k and £11k,
(plus CAR as appropriate)

Our client is a large computer services organisation with a significant complement of 4th and 5th generation equipment supporting the development of an extensive variety of real time and teleprocessing based application systems. Full use is made of distributed processing facilities with customers being offered mainframe, mini or micro computer solutions to a wide range of business problems.

To meet the overwhelming demand from customers following the escalating trend to cheaper and more effectively controlled information processing, our client of necessity is embarked on a planned two fold expansion of his management, supervisory and technical staff resources, from skilled technical designers to seasoned systems project managers.

The appointments provide real opportunity to become versatile through all aspects of on-line mainframe and mini based business data processing, thus providing the successful candidates with an expanding future in tomorrow's DP.

Applicants should be educated to at least 'A' level standard, and possess a background of experience in either programming, analyst/programming, systems analysis, programming or systems team leading, project or systems supervision or management, in a 3rd generation DP environment.

Experience in some on-line, real time or telecommunications would be regarded as a bonus at the lower end of the salary range. For the senior appointments a minimum of three years systems analysis and design on a major system, plus around two years supervisory

experience is essential. Some appointments provide the opportunity for occasional travel in the UK and overseas. Where appropriate the client will provide adequate training, in house and in the field, to enable successful candidates to operate effectively in terms of personal performance and future career development.

Depending on the relevant depth of experience, starting salaries will be offered between £8k and £11k, coupled with a range of significant benefits, including a company car where appropriate, together with a realistic and compensating relocation package. Extensive new property developments in the locality are currently under way with prices ranging from £25,000 upwards. The nearby market town is fully developed with a full range of shopping, schools, and recreational facilities. For those seeking the occasional 'bright lights' London is 50 minutes away by train. A day at the sea presents no great problem and the rolling countryside is a step away from the front door.

TO APPLY
Please send a ONE PAGE, handwritten or typed, listing of name, address, age, marital status, home and office telephone numbers, current salary, and employer, employment history, including positions held, roles played, relevant responsibilities, and hardware and software systems exposure to date as relevant, to ANTHONY SPURR, Executive Selection Division, quoting reference number G743. Applications are invited from either sex and will be treated in the strictest confidence.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01 633 0866



JBA

TECHNICAL SERVICES MANAGER

Middlesex/Surrey border £10,500+ car

The Development Centre of a leading U.S.A. Computer Manufacturer wish to recruit a senior technical manager to take over departmental responsibilities, reporting to the manager of the entire centre. The appointee will give direction to computer operations, product assurance, documentation and applied technology. Also, there is an increasing need for technical guidance to be offered to development teams in the areas of financial, banking and accounting products.

Applicants should already be at a 'Management' level ideally still involved with technical development, e.g. software engineering. A good business and/or commercial awareness is called for, as well as the attributes associated with management of people and large high budget projects.

PROJECT MANAGERS

£8000-£9000

The Centre also has vacancies for two Project Managers with Accounting or Financial experience, respectively. In both areas new development and advanced products are planned for this year and into the 1980's.

The managers will be responsible for the excellence of products, planning, and the execution of market introduction, together with management of subordinates.

Applicants should be senior analysts with a high degree of technical ability in accounting and/or financial areas, plus an awareness of hardware and software efficiency. Some background of benchmarking is a bonus. The positions offer a real opportunity to get involved with the management of people and accomplishment of product design.

Contact: Mike Creamer
JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1. Telephone: 01-491 4478

MANCHESTER: Computer professionals £4,500 to £9,500

Systems Designers Limited formed its Manchester Branch in Autumn 1978 and due to a full order book, requires further computer professionals

Applications are currently in hand in the Communications, Viewdata, Scientific and Process Control fields

Staff are required at all levels for these interesting projects which use the latest mini and micro computers. If you have one to eight years' real-time experience and would enjoy the challenge of helping our branch grow at an even faster rate, please contact:



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Systems Designers Limited
Elli House
Woodlands Road
Altrincham, Cheshire WA14 1HG
Telephone: 061-928 9305

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The successful candidate will have at least 1-2 years' experience in COBOL programming or mini computers.

In addition to a highly competitive salary, the bank provides excellent fringe benefits including house mortgage scheme, non-contributory pension scheme, BUPA and luncheon vouchers of 75p per day.

For further details, please contact Sue Arnold on 01-606 6099.

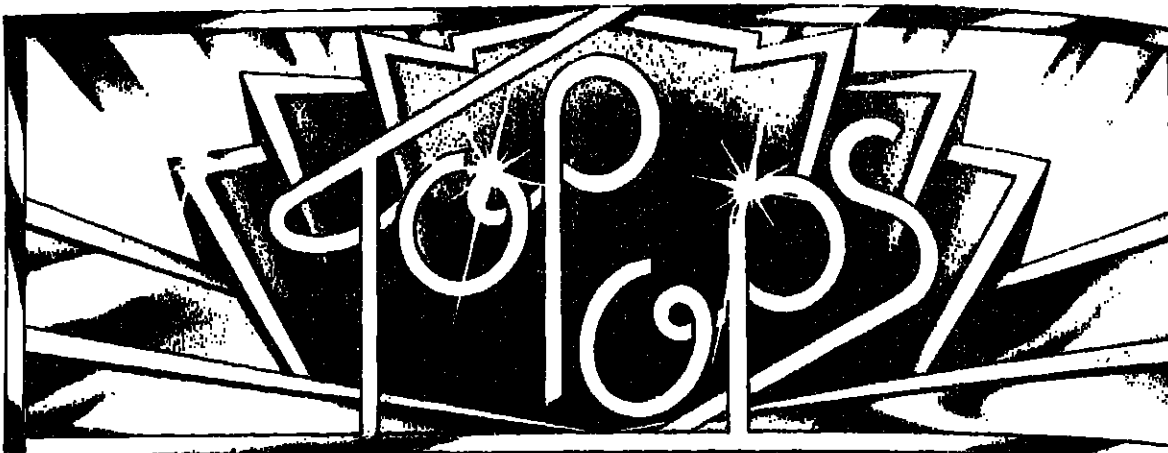


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Computer education -a vital contribution to IBM's future...

Right now smaller computers are moving ahead more rapidly than ever before. With advancing technology, their cost has come down, bringing them within the financial reach of smaller and smaller businesses. And this in turn has led to a more competitive and more challenging industry. It is an area of huge potential on which a great part of IBM's future success depends.

Crucial to this are the men and women who develop, set up and run both practical and theoretical training sessions, which provide a professional understanding of IBM equipment and its varied applications. Designed principally for the education of our customers, they are also given to our sales and systems engineering staff. The responsibility is a heavy one, but the rewards—both financially and in terms of career opportunities—are considerable.

We're now looking for more energetic, articulate men and women to join our education team at present based at Rayners Lane, N.W.

London. Next year, however, we will be moving to a brand new education centre in Basingstoke. We will, of course,

account for all relocation expenses.

Right now, you should be a graduate, working in a data processing environment with at least 3 years' programming experience. Alternatively, you could already be involved in education as a teacher or lecturer in a school or university—or in a data processing related area. Either way, IBM's training will provide you with the expertise—technical or educational—to keep you abreast of the latest technological advances, and to contribute to the development of new training material.

If you are interested in developing a valuable and far-sighted career within the field of education, now is the time to find out more.

Excellent starting salaries in keeping with qualifications and experience, will be supported by a wide range of benefits, which includes a non-contributory pension scheme and free life assurance.

Please write with full career details to: Ms. Zulie Mohamed, IBM United Kingdom Limited, 28, The Quadrant, Richmond, Surrey TW9 1DW, quoting ref: C.W./920420

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You would be responsible for operating a large ICL 2900 configuration under VME/B. There is substantial use of communications, including both TP and MAC, and IDMS is being introduced.

You should have had significant supervisory experience of major operating systems in a communications environment and about five years' operations experience in total. While 2800 and VME/B knowledge is highly desirable, candidates with a background on other large mainframes will be considered and necessary training provided. (Ref. 999)

Please ring us for a preliminary confidential talk, quoting the appropriate reference, or leave a message on our answering machine after hours and we will contact you.



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But experience isn't all we're looking for. The ability to communicate effectively with small groups of Programmers is equally important.

We're not going to put a value on your contribution at this stage. Suffice it to say that we will pay whatever it takes to attract the sort of Software Lecturer our Programmers can rely on—and we'll back the salary with a full range of big company benefits.

For full details, please write to Chris Hill, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts WD6 1RX. Telephone: 01-953 2030 ext 3449 or call 01-207 3455 any time.



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DEPARTMENT OF
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Salary on scale £4,232-£8,462 per annum (under review) with appropriate pension.

Further particulars from: The Secretary, The University, Aberdeen, with whom applications (two copies) should be lodged by August 9th, 1979.

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DATA PROCESSING MANAGER

We are looking for a data processing professional to continue development of our systems to computerise the production of technical documentation and other systems, including costing, payroll and an interesting variety of ad-hoc projects.

The machine is an ICL 2903 which includes EDS 30 discs. The ideal applicant will have sound knowledge of ICL software and RP62, plus the management skills necessary to control a department.

Please telephone Mr. P. J. D. Bamford on 01-397 9365 for an interview or write enclosing CV to:
DYTECHN LIMITED
Rochdale Road
Chesham, Bucks

Recruitment



in Informatics

Message Switching & Communications Central London

Salaries: £6.5—11K

Our International Client based in Central London is seeking to expand and establish new project teams working in the areas of Data Communications, Message Switching and Mini Software. Joining one of the new specialist project teams will give you the opportunity to enhance your career by learning new techniques and applications and you can be certain that you will be involved from the outset in new State-of-the-Art developments. Successful candidates, probably aged between 23 and 33, should be either graduates or have a very solid background in advanced computer applications. You are likely to be either a Systems Designer/Consultant Analyst/Programmer or a Programmer in a Mini Computer environment and have extensive Assembler experience. Any specialist expertise in the areas of Data Communications, Message Switching, Computer Networks, Process Control or Mini Computer software will be considered particularly advantageous. Interviews will be held throughout August at our Client's London Office. Ref: A 19/07

Systems Designers + Programmers City of London Institution

Salaries: £6.5K—£9K + Mortgage

A well-known and respected "Blue Chip" Banking and Assurance Institution established in the City and other European financial centres requires additional computing professionals up to Project Leader status for its systems development and hardware upgrade projects. Ideally Programmer candidates should offer 2 years continuous PL-1 or COBOL programming experience in an on-line environment. Of particular interest will be those who have current Teleprocessing (ICIS, ENVIRON or SHADOW) or Database (IMS, TOTAL) involvement. The Company values highly its computing professionals and consequently you will become a member of a specialist project team working to strict documentation and programming standards. Our client offers a subsidised mortgage facility (after a brief qualifying period), personal loan scheme, private health and a non-contributory pension scheme. Ref: B19/07

Assembler/Fortran Programmers Spain

Salary: £15K (Tax Free)

A leading Scandinavian Systems and Turnkey Supplier with several European and U.S. offices requires Assembler Programmers for its recently opened Madrid operation. Whilst the applications under development are sophisticated Real-Time projects, previous experience of Real-Time is not absolutely essential but in-depth FORTRAN and ASSEMBLER programming expertise is a pre-requisite. Preference will be given to those candidates who have very recent or current experience on UNIVAC 118 or UNIVAC 490/4 series. Willingness to relocate to Spain for a minimum of one year is absolutely essential and to assist you in your removal our client will meet all relocation expenses in addition to providing initial paid accommodation. Interviews will be held at our London Offices in early August. Ref: C19/07

Interdata Programmers West Germany

Salary: to £17K

An International client with a long track record of successful implementation of new systems for European Public Institutions and Government Agencies is seeking several INTERDATA orientated Programmers for a long standing German project. They now require additional personnel to cope with the installation of new hardware and extended applications areas. You will become a member of one of several specialist project teams in which you will make a valuable contribution whilst simultaneously expanding your own technological frontiers. We are specifically requested to recruit only FORTRAN and Assembler Programmers who are fully familiar with Interdata hardware. You should therefore offer two years or more programming experience on this machine. The applications areas in which you will be involved comprise mathematical modelling, testing, data communications and verification. On completion of the project you will be given every opportunity to relocate to one of the Company's other European offices. Ref: D19/07

ICL 2900 Thames Valley + Manchester

Salary: £6K—£10K

A prestigious client having its U.K. headquarters in a University City requires Programmers, Systems Analysts and Designers for early employment. Of particular interest will be very recent or current experience on ICL New Range hardware in both a Teleprocessing and Database environment. Those who have expertise in conversion from ICL 1900 to 2900 are also attractive. You are therefore invited to apply immediately if you can demonstrate in-depth VME/B or K, DME or IDMS experience. The Company offers a wide ranging portfolio of fringe benefits in addition to an excellent salary. Ref: E19/07

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The ideal candidate will possess at least one year's programming experience in BASIC+ on a PDP 11 system.

The Programmer will accept programming assignments and prepare detailed flow-charts for each program and thereafter, test, debug and produce documentation in accordance with the company's standards. In addition the successful applicant will be required to prepare computer operating instructions, progress reports and also be involved in the training of user personnel.

Salaries are reviewed at 6-month intervals.

For further information and details of the excellent fringe benefits and prospects contact:

Lindsey Lee on 01-637 0781

or your local office of

ATA COMPUTER RECRUITMENT
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DATA CONTROL SHIFT SUPERVISOR

Tooting, S.W. 17.
From, £5,000

The South West Thames Regional Health Authority wish to appoint an additional Data Control Shift Supervisor to be based at the Regional Computer Centre, Springfield Hospital, Tooting, London SW17.

Computing, within the centre, is currently based on powerful ICL 1904S hardware, running under GEORGE III, which provides medical, financial and management information services to a region containing a population of some 3 million and over 150 hospitals.

The essential requirements for this position are at least two years Data Control experience, preferably in a supervisory role, plus a working knowledge of GEORGE III JCL. The successful candidate will work on a 2-shift basis and be responsible for the supervision of a 4-strong team. The salary quoted includes London Weighting and a 20% Shift Allowance.

For further details, phone Sylvia Lyons or Les King on 01-839 3351 up to 8.00pm each evening, or write, with comprehensive career details and telephone number, to: Modem Computer Services Limited, FREEPOST, London WC2N 2BR.

01-839 3351

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To the Sales Executive who wishes to move into management, with unlimited career progression, with a rapidly expanding organisation, this is an ideal opportunity.

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My client is an American-owned multi-national with diverse product interests and highly skilled management. Throughout the world sales are made through a tightly controlled distributor network, and consequently the Headquarters operation is a highly efficient, low overhead function, comprising a small and highly proficient team.

The operation is truly international, having responsibility for all markets, apart from the U.S.A. As a result, candidates for all jobs

must be willing to travel and be prepared to spend around 30 days a year out of the U.K. principally in Europe and U.S.A.

All the positions are based in West Middlesex and carry a company car. Other benefits include membership of B.U.P.A. and a good pension and Life Assurance Scheme (contributory).

Enquiries and applications to: A. P. BAKER, 01-499 4501 or write to me at the address given below.

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From £8,000 + Car

THE TASK:
To support the distributors in their selling and installation work, with particular emphasis on early implementations of new products, and to generally provide a project management capability with reference to software products.

YOUR BACKGROUND:
Several years practical experience at the "sharp-end" with a vendor and sound knowledge of IBM communications software and operating systems.

Ref: RW29/1

PRODUCT SPECIALIST-WORD PROCESSING

£7,500 + Car

THE TASK:
To provide product support to the distributor network. For hardware, to organise training down to chip level. For software, to provide operational feedback. General pre- and post-sales activity, and support of early installations.

YOUR BACKGROUND:
Broadly based practical experience in both pre-sales and post-sales roles.

Ref: RW29/3

SYSTEMS ENGINEER - HARDWARE

£7,500 + Car

THE TASK:
To successfully introduce selected new products to the distributor network, including product familiarisation, distributor training and machine performance evaluation.

YOUR BACKGROUND:
Educated to degree or H.N.D. Level, and practical experience in design or a senior Field Service role or Product Support.

Ref: RW29/2

PRODUCT SPECIALIST - PORTABLE DATA ENTRY TERMINALS

£7,500 + Car

THE TASK:
To provide pre-sales and post-sales support to the distributors with particular reference to the overall systems approach. To assist in new product specifications.

YOUR BACKGROUND:
Knowledge of — and preferably practical experience in — Data Communications and Mini-Computers. An interest in Micro-processor technology and a broadly based systems background.

Ref: RW29/4

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47/48 New Bond Street (entrance in Maddox Street)
London W1Y 0HE Telephone 01-499 4501

Systems Designers Limited is a British Computer Systems Consultancy which, during the 10 years it has provided the industry with professional support, has established the highest expertise and credibility in the field of mini and micro based systems. During this 10-year period, the company has grown to 200 professional staff in strength and retained its independence and its informal, though efficient, way of working. The company is still growing, enjoying expansion through a wide variety of work carried out in the U.K., Europe and the USA.

Currently we require Consultants, Engineers and Programmers with software and systems knowledge to help us solve the theoretical and practical problems of this high technology industry, mainly in the areas of:

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INDUSTRIAL Process control and monitoring, plant control simulation, high speed data analysis and distributed microprocessor system.

MILITARY Modelling, avionics and radar systems, complex rigs, simulators, microprocessor missile systems and signal processing.

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VIEWDATA International Viewdata Centre, X25 packet switch links to external databases, New Viewdata products for USA and Europe.

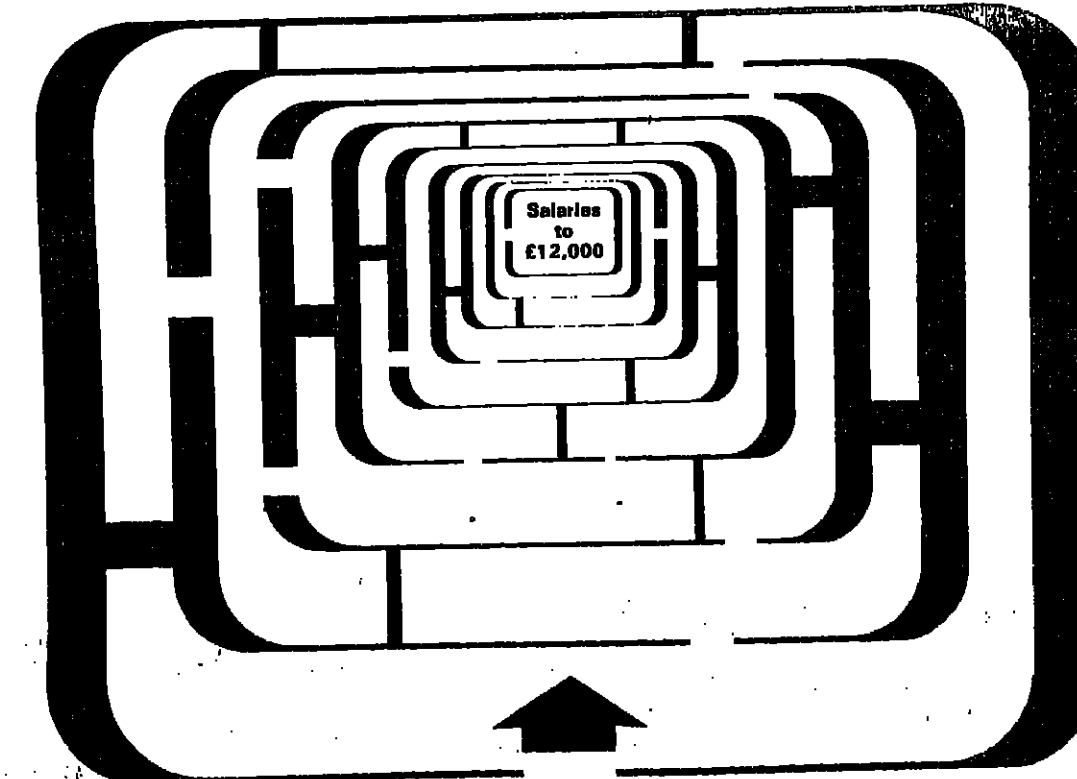
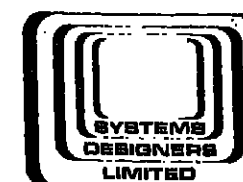
CONSULTANCY Project Management, software and systems development technology, complex military systems and theoretical studies.

So, if you have a good academic background, at least one year software experience and are equal to the challenge, we will be very pleased to hear from you.

The company runs productivity bonus, insurance and pension schemes and also offers relocation assistance.

Telephone Ann Gregory for an application form and further information about the company or write to:

Bill Hockey, Operations Director
Systems Designers Limited
1 Pembroke Broadway, Camberley, Surrey GU15 3XH.
Telephone Camberley (0276) 62244.



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Oil industry consulting

Logica

Logica's Middle East Operation is seeking people to work on the planning and development of advanced data acquisition and control systems for Middle Eastern oil companies.

■ You should have a relevant degree and 8 years experience, of which half should be in industrial systems

■ You should have experience of system design using mini and micro computers and a knowledge of telemetry techniques

■ You should be familiar with aspects of oil or gas production and distribution

■ These posts involve travel to the Middle East on a variety of short and long term assignments assisting clients with various aspects of system design and implementation

■ The projects are challenging in terms of scale and exciting in their use of advanced technology

■ Your career record will be expected to justify a basic salary of at least £10,000 p.a., plus an attractive remuneration package for overseas assignments.

These are career positions with excellent prospects for advancement within Logica, the pre-eminent professional services company specialising in the fields of computing, communications and management science.

For further information please call Julia Roth on 01-637 9111 or write for an application form, Ref MEO/9 to:

Logica Limited,
FREEPOST 21,
London W1A 4JZ.

MYRIAD

SYSTEMS MANAGER

LONDON

TO £11000

Our client is a large independent public company and market leader in their field. Major investment in D.P. has recently been made to cope with ambitious growth plans for the future. A stimulating and challenging opportunity now exists for a Systems Manager who will play a major role in the expansion of computing facilities offered to associate companies within the group.

The Systems Manager will manage a competent team of Analysts and Programmers involved in the development of a variety of interesting applications. Implementing systems on a project oriented basis the position will entail a high degree of user contact and could involve a limited amount of travelling throughout Europe. In addition to current development activities the person appointed will join the departmental management team and be required to keep abreast of the latest hardware and software innovations in order to effectively contribute with long term strategic plans to ensure the groups market lead is secured well into the late 1980's.

Applicants should be able to demonstrate a progressive and successful record of systems implementation and be familiar with sophisticated project estimating and control techniques. Ideally offering experience of on-line systems development, candidates should have the ability to manage an energetic and dynamic team in a highly user oriented organisation. Preferably aged 30 to 35 with a degree or professional qualification applications from candidates with experience of financial systems or distributed processing would be particularly relevant.

Located at their computer centre in South-West London from which operations throughout the UK are controlled, the company offers a challenging and progressive future with potential expansion to subsidiary companies throughout Europe. In addition to first-class conditions of employment a salary in the region of £11,000 p.a. will be offered. Generous re-location expenses are available where appropriate.

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Ref. E1/1907

£10k+Appointments £10k+



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c. £12,000 + Car + Bonus

An unusual opportunity has arisen for a professional computer person to join a fast growing mini-computer company in a senior marketing position based west of London. The company manufactures advanced micro-processor based automated office systems which operates data processing, word processing and communications simultaneously with equal facility. An extensive network of distributors has been set up throughout the world and the prime responsibility of this new appointment is to assist in appointing and supporting additional distributors in the U.K. and Continental Europe.

Extensive travel throughout Europe will be involved. The position will appeal to a technically competent energetic computer marketing person already employed in a computer or consultancy organisation elsewhere.

Experience in all aspects of marketing and installing mini-computers is required and it is likely that the

successful candidate will have worked in the computer industry for at least 5 years. Knowledge of another European language, preferably French, would be an advantage, likely age range is 28-35 and education to degree level is required.

Salary is negotiable c. £12,000. The total remuneration package includes a motor car, generous pension scheme, free health insurance and other usual benefits. A bonus scheme is also operated.

In the first instance, please send your c.v. to, or request an application form from, Ron Burgess quoting reference RB/CW/2361.

Jean Dennington Limited
Personnel Consultants,
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2-3 years experience of Unibus 1100 or Unibus 90 series equipment is an essential requirement. The assignments, offering a variety of locations, are for 1 or 2 year periods.

Generous benefits include:-

- * cost of living allowance
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Applicants must be sufficiently mature, confident and flexible to enable them to function in a variety of working environments, and also to be willing to readily adapt to different life styles.

These posts are now available and initial applications should be made immediately. Please write with full details (both career and personal) to H. S. Croft at the address below or telephone 01-379 7383 for an application form.

Please inform us of any companies to whom you do not wish to have your application forwarded.

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& Partners**
RECRUITMENT ADVISING DIVISION
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German Software Company in DUSSELDORF is looking for several experienced

APPLICATION PROGRAMMERS

to be responsible for developing online standard software packages in the field of Manufacturing Control. We are operating on Texas Instruments Systems.

The successful applicants should have the following qualifications:

- education to degree standards either in commercial or technical subjects
- at least three years' experience in COBOL
- practical experience of realtime and/or online mini computers
- basic knowledge of German is essential

The positions will be rewarded with:

- salaries up to £12,000 p.a.
- life assurance scheme
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Applicants should please send a detailed career history to:
S. Cavlek, Gerhart-Hauptmann Str. 34, 4006 Erkath 1, Germany

So you know all about Systems Software

How about Computer Systems to Design Systems Software?

The brief for this job is to assist in the design and implementation of a methodology for live controlled evolution and maintenance of systems software.

The hardware centres on a major family of mainframe computers together with new systems currently under development. The location - Southern Germany.

We are looking for:-

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With at least three years relevant experience to work on the development of technical procedures for a system of computer aided design to be used on operating systems software.

Senior Programmers

With several years' experience of programming as part of a major project team. The job will be of particular interest to programmers with an interest in the development of systems software.

The main qualifications we require are experience and innovative ability.

The company - an international organisation based in Germany with a first class record in the business world and a reputation for using the skills and talents of their people with imagination and with commonsense.

Background - the people we require will have extensive experience of at least two of these languages - PLI, Cobol, Assembler, SPL.

To make a contribution to this project you will need a clear understanding of how systems software is developed at present and more to the point, how it should be developed in the future.

In return we can give you the satisfaction of working on the project which will produce the industry standard for systems software development in the '80's.

Extremely attractive salaries are being offered for these positions together with the usual benefits associated with a large international organisation.

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at either -
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Tunbridge Wells, Kent 2203 Much, West Germany
0892-25702 010-49-2245-2824
Interviews will be arranged in London

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(TRAIN TO ANALYST/PROGRAMMER)

VICTORIA SW1 to £6,500

A minimum of ONE YEAR'S RPG II experience could be your passport to SYSTEMS ANALYSIS training on this IBM System 34, which has Real-Time architecture and currently supports eight local terminals with a Remote terminal coming on-stream next month.

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We offer a basic salary of c.£6500 p.a. and an attractive benefits package that includes relocation expenses, where appropriate.

To find out more please contact:

AGB

Chris Toome, Director of Computing
Audits of Great Britain Ltd, Audit House,
Field End Road, Eastcote, Ruislip, Middx, Tel: 01-429 1333.

SCIENCE RESEARCH COUNCIL COMPUTER PROGRAMMERS FOR SPACE RESEARCH

The APPLETON LABORATORY has vacancies for COMPUTER PROGRAMMERS to support several major Space Science projects one of which is the Infra Red Astronomy Satellite (IRAS), due to be launched in August, 1981. The Science Research Council has the responsibility for providing the satellite control centre and a data analysis centre for this project, which is a collaborative venture with the United States and the Netherlands and staff are required to join a team of programmers who are currently preparing the software to be used for processing data from the satellite. The main computers will be PDP 11s, a GEC 4070 and an ICL 2980 and the Programmers will work in the following areas:

Large-scale data base handling;
Orbit and attitude analysis;
Real-time systems software;
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Posts will be available at both Scientific Officer and Higher Scientific Officer levels. Applicants should have a degree, HND, HNC or equivalent qualification in Science, Mathematics or Computer Science, with at least two years' programming experience for the higher posts.

The posts will initially be located at Ditton Park, Slough, but will be transferred later to Chilton, Oxfordshire.

Salary will be on the following scale, the exact step depending on qualifications and experience: £5,002-£6,488 for an HSO or £3,584-£5,360 for an SO. Outer London Weighting Allowance included.

Non-contributory pension scheme.

Please request an application form from:

Miss J. T. Varlet
Science Research Council
Appleton Laboratory, Ditton Park
Slough SL3 9JX
Telephone: Slough 44234, Ext. 183

Closing date: 9th August, 1979.

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Major UK organisation requires professional Senior Analysts with over 3 years commercial/manufacturing experience. Excellent prospects and benefits.

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COBOL PROGRAMMERS
Our client requires ICL COBOL Programmers with over 3 years experience to join on-line development teams.

LIVERPOOL c.£6000 + Benefits
COBOL PROGRAMMER
A COBOL Programmer with 3 to 4 years commercial experience and some knowledge of either NCR 8000 or TI 9090 Hardware can enjoy an outstanding working environment with a major DP organisation.

MERSEYSIDE to £6400 + Benefits
SYSTEMS ANALYSTS
Our client requires mature Analysts for major developments utilising the latest DP techniques. Very good benefits and bonus available.

NORTH CHESHIRE to £5700
COBOL PROGRAMMER
Multi-site DP user requires an ICL COBOL Programmer with a wide range of development experience. Opportunity to join a fast moving development team.

LIVERPOOL to £6250
SYSTEMS ANALYST
Our client is seeking Analysts with a sound commercial background. Hardware will be shortly upgraded to allow use of latest systems.

BURY c.£5000
COBOL PROGRAMMERS
Large machine user requires young, well educated COBOL Programmers with either ICL or IBM experience to support on-line applications. 1 to 2 years good COBOL background required.

NORTH MANCHESTER £6000
SENIOR PROGRAMMER
Our client is seeking a Senior Programmer with solid COBOL and supervisory experience on ICL 1900/2900 hardware to become Programming Team Leader.

MERSEYSIDE £5200 + Benefits
RPG II ANALYST/PROGRAMMER
IBM System 3 user requires an Analyst/Programmer able to work on own initiative and see systems through to completion. Benefits and prospects excellent.

MANCHESTER c.£6500
CORAL/RTL II
To cover business expansion our client is seeking Analysts and Programmers with CORAL 66 or RTL II experience. Knowledge of mini assembler in a process control environment is desirable. 2 years + experience required.

PRESTON c.£7000
PROJECT LEADER
Large DP user is seeking a Project Leader or Senior Analyst with in-depth systems experience, together with a background in programming. Development work is highly sophisticated.

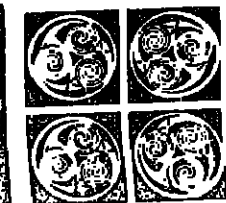
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Our client is seeking young IBM COBOL Programmers to supplement development teams. Excellent prospects and Bonus scheme.

Phone STEVE SYKES on LEEDS (0532) 444185 (day) reverse charges if necessary or on LEEDS 662417 (evenings and weekends) for more details on these, or any other positions in the North West. Or write with brief details (no stamp required) to Lorian Computer Services, Ltd., FREEPOST, Leeds LS7 3YY.

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London neg. to £10,000
Computer Sciences Company is part of the world's largest independent software and systems house. The organisation is planning to greatly increase its activities in the UK business and commercial systems market. As a result several opportunities for experienced senior analysts and designers have been created, with a special emphasis on knowledge of TPL, database, network planning and communications.

A wide range of projects is to be undertaken, so the opportunity for varied and interesting development at the forefront of technology is assured. We are interested in talking to any senior applicants who want to know more.

Contact: Andy Wright

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Richmond & Europe Salaries to £9,000 + benefits
Rand Information Systems Ltd, a highly profitable systems house have taken a recent decision to expand their communications systems software business. They are currently carrying out a specific feasibility and design study on behalf of an international company for a large communications network. The initial positions being created for this and other projects are:

- * TECHNICAL CONSULTANTS - with upwards of 6 years software design and implementation experience.
- * SPECIALIST PROGRAMMER/ANALYSTS - with between 3-5 years, preferably real-time software design experience.
- * PROGRAMMERS - probably Graduates, with around 18 months experience in this field.

Above average salaries are offered, in a generous remuneration package which includes free-life assurance, BUPA and non-contributory pension.

Contact: Andy Wright

Design Engineers

City Based to £7,000
Opportunities exist for graduate design engineers to join a small team of specialists, working on the development of telex message switching systems, using both micro and mini computers. Candidates should be familiar with TTL logic design related to computers, and ideally have had some exposure to ASSEMBLER, data communication techniques and microprocessors.

This is an excellent opportunity to work on new technology projects.

Contact: Margaret Stevens

For further information on any of the above vacancies, please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.
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16 Maddox Street, London W.1. Tel: 01-491 4478

NEW MIDLANDS VACANCIES

LEICESTERSHIRE to £9000
PROJECT MANAGER
Project Manager required to work in a large manufacturing organisation. Must have sound experience of ICL range of equipment. This post will need a computer professional who will be equally happy in support management, pre-sales, and hardware and software implementation.

BIRMINGHAM to £7500
PROGRAMMERS
COBOL Programmers with 2 to 3 years experience required for an ICL 1902T installation. Knowledge of ICL 1900 George II, and/or Driver an advantage. Subsidised restaurant and good sports and social club.

BIRMINGHAM c.£7500
SYSTEMS & PROGRAMMING MANAGER
Senior computer professional needed to head up a systems and programming department. Must have experience in COBOL, ICL 2903/4 using JCL, and commercial applications. Retail knowledge an advantage.

BIRMINGHAM to £10000 + Car
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Computer manufacturer requires a sales person to sell services and hardware. You will have a sound knowledge of mini and/or accounting machine hardware and a good sales record. An excellent opportunity for a dynamic person to work in an existing territory.

BIRMINGHAM to £6300
SYSTEMS DESIGNERS
Systems designers with minimum of 3 years programming experience, or recently trained systems analysts required to work in a manufacturing environment. Must have a good secondary education background. Benefits include flexitime.

BIRMINGHAM to £6200 + Bonus
FORTRAN PROGRAMMERS
Experienced FORTRAN Programmers are required to work on commercial applications. Excellent Productivity Bonus in operation.

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This company requires a COBOL Programmer with 2/3 years experience preferably on ICL 1900 range for general applications.

BIRMINGHAM c.£5500
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Self motivated all round computer person with good experience of COBOL or ICL 2903/4 under JCL. Knowledge of commercial systems an advantage.

BIRMINGHAM to £5500
ANALYST/PROGRAMMER
Experienced Analyst Programmer with RPG II, COBOL and/or on-line experience an advantage. Must be able to communicate effectively with management of all levels.

BIRMINGHAM to £6300
SYSTEMS ANALYST
Systems analyst with 1 years experience required by a large financial organisation. Programming and/or on-line and/or ICL knowledge an advantage. Free lunches available.

BIRMINGHAM to £6200 + Bonus
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Experienced COBOL Programmers and Senior Programmers required for Univac installation. Univac 1100 experience and/or mini experience an advantage.

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The above vacancies are just a few of those available now. If you are looking for a new position then contact us when we can discuss your requirements and find an appropriate job for you quickly.

Phone PETER GILBERT on LEEDS (0532) 444185 (daytime) or on (0274) 834074 (evenings and weekends) for these or any other MIDLANDS vacancy you may require. Alternatively write with brief details (no stamp required) to Lorian Computer Services, FREEPOST, Leeds LS7 3YY.

HOLLAND

Consultants Approx. £20,000
A leading UK systems software house wishes to strengthen its highly successful operation in The Netherlands by the appointment of five senior consultants.

The requirement is for people of consultant calibre, capable of leading large projects and/or designing complex real-time systems. Substantial user contact is necessary and experience of the process industries will be an advantage.

Those appointed will be expected to become resident in Holland for a period of at least one year, but will be employed by the UK parent company. The total salary package whilst abroad will be accompanied by large company benefits.

Contact: Mike Creamer

Lecturers

South Coast to £8,500 + benefits
A number of vacancies have been created within the Education Division of one of the UK's major computer systems and services companies, due to expansion and growth of this side of their business.

Courses given cover an extremely wide range of technical and other skills for operations, programming, systems and managerial staff. Applicants must therefore possess sound all-round d.p. experience which must include project management presentations and user training.

An outstanding package includes BUPA, relocation, if appropriate, and occasional overseas travel.

Contact: Margaret Stevens

Programmers - Industrial Systems up to £8,500

Berkshire
A well established and highly successful group, part of a large British organisation, are expanding to cope with the increase in the business of specialised real-time systems, including the development of a sophisticated distributed mini/micro system.

Candidates should have at least one year's programming experience using CORAL, RTL/2 Assembler or other similar languages in a real-time environment. A knowledge of PDP11s, HP or micros would be an asset.

Excellent salaries, large company benefits and the opportunity to work with professionals on new technology applications.

Contact: Jim Baker

MYRIAD

ANALYST/PROGRAMMER → SYSTEMS MANAGER
IBM SYSTEM 3 → IBM SYSTEM 38NEAR
HIGH WYCOMBE

c£7000

Our client, the UK-based member of a large international group, is about to embark upon a new era of computer systems development involving the installation of new hardware and supporting on-line systems. A very interesting opportunity has arisen for a forward thinking analyst/programmer to become an integral part of this period of growth and help provide the expertise to sustain this development.

Candidates for this position should possess a sound RPGII programming background with the ability to lead systems development. The successful applicant will be offered the opportunity to progress into the role of Systems Manager and will be given the necessary training in new software and on-line techniques in readiness for the installation of the IBM System 38.

The commencing salary will be negotiable and is dependent upon experience. The company offices are located in a very attractive rural setting and the company will offer favourable relocation assistance for this appointment.
Reference NW4/1907

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Systems Programmers
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You will fill a key position at one of a variety of levels within a small hand-picked high calibre team. Technical skills developed in systems programming plus good personal qualities are the essential requirements.

Systems Designers
£7500-£10,000

We need people for our usability unit who can take responsibility for specifying new products and extensions and seeing them right through to delivery by co-ordinating quality control and user liaison.

It's a varied and demanding function calling for sound technical and organisational skills. You should have a good five years in the computer business, and be able to appreciate the needs of end-users. Knowledge of Computers, Language Design and Data Base concepts would be an advantage.

Interested?

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Outside working hours you can contact Gill on Bracknell (0344) 23714 and Andrew on Wokingham (0734) 784665.

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LOLA (London On Line Local Authorities) provides computer facilities to a consortium of four large London Boroughs. The computer centre is situated in modern premises at Enfield and current equipment is a 4-megabyte IBM 370/158 AP. On-line updating facilities are supported on over 130 remote VDUs with programs written in PL/I running under IMS/VS and MVS.

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Leaders (2 posts)

Inclusive salary range
£6586-£6971 p.a.*

People with drive and enthusiasm who can demonstrate that they have the necessary high level of technical and managerial skills required for these senior posts within the Operations Section. Candidates must have had at least 4 years' operating experience on large IBM mainframes using OS/VS1 or MVS with 2 years at Senior Operator level. An in-depth knowledge of JCL and IBM utilities is essential; you should also have had experience of controlling an IMS i.p. network and be familiar with master terminal operator routines.

Post 2

Leading
Operators (2 posts)

Inclusive salary range
£5220-£6389 p.a.*

Candidates should be experienced Operators or Senior Operators with at least 3 years' experience on large IBM mainframe equipment using OS/VS1 or MVS. Knowledge of JCL and IBM utilities is essential and some experience of large i.p. environments is essential.

Post 3

Operators

Inclusive salary range
£4625-£5115 p.a.*

Applicants should have a minimum of 2 years' experience of OS/VS1 or MVS.

Post 4

Shift Control
Clerk

Inclusive salary range
£5220-£5763 p.a.* with
possible progress after
6 months to salary range
£5894-£6389 p.a.*

Candidates must have had at least 1 year's experience in a Control environment PLUS a good working knowledge of OS, JCL and Utilities.

FOR ALL THESE POSTS 3-SHIFT
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For further information on Posts 1, 2 and 3 telephone Peter Anthony on 01-368 6611, Ext. 268 - for Post 4 ring Norman Bennett on Ext. 230.

Application forms from Mrs. B. Dorrington, LOLA, Tower Point North, Sydney Road, Enfield, Middx. EN2 8UE (Tel: 01-368 6611, Ext. 278).

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or Tel. 01-328 7281

Systems Analysts

Candidates for these positions should have had from one years systems analysis, design and implementation experience for the more junior vacancies, to at least three years for senior analysts. A programming background whilst not essential for all positions would be advantageous in some instances.
(Ref CW/79038)

Analyst/Programmers

For consideration for these positions applicants should have three to four years in data processing including considerable experience programming in COBOL. Some systems design experience is also essential and the chances for greater involvement in systems analysis are excellent for suitable candidates.
(Ref CW/79039)

Programmers

The minimum requirement for these vacancies is about 12 months COBOL experience, through to 3 or more years for senior positions which would involve some supervisory and team leading responsibilities. For the more senior positions previous IBM experience is required, preferably in a CICS installation.
(Ref CW/79040)

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And once again, we've exciting career openings for ambitious Real Time Programmers with 4 to 5 years' experience and management potential. They can look forward to:

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- * a salary up to £8,000 plus big company benefits.

Our current projects demand the very best Software Professionals, our projected expansion the very best Software Managers. If you've an eye to the future ring Jack Healey or Chris Turner on Potters Bar (0707) 51199 or write with sufficient details to make an application form unnecessary to the Administration Centre, ITT IDEC, Orchard House, Mutton Lane, Potters Bar, Herts EN6 3AR.

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NORTHERN OPPORTUNITIES

Senior Analyst Programmers with RPG11/ System 3 experience ideal. To work on project implementing Systems in European Data Centre. Excellent career opportunities. Ref. 1195.

Excellent career opportunities offered by this rapidly expanding international company. IBM experience a definite advantage. Ref. 1045.

PDP 11 or similar background with CORAL or MACRO ASSEMBLER experience to work in process control environment. Ref. 1162.

ICL/COBOL Programmers are required by our clients to work on the introduction of an On-Line system in a Commercial Environment. Ref. 1191.

Our client requires COBOL Programmers with an ICL background to work on installation of new equipment. Applications Commercial Ref. 1197.

COBOL Programmers with a financial background required to work in new installation. Subsidised mortgage. Ref. 1139.

Our client requires programmers and programmer analyst with COBOL or CORAL experience to develop On-Line Systems. Ref. 1109.

House purchase scheme among benefits offered to experienced COBOL or Assembler Programmers On-Line developments. Ref. 1023.

Knowledge of IMS and MVS required with approx. 2 years' experience. Some experience of customer contact and preparation of specifications preferred. Ref. 1189.

Non-contributory pension scheme/free life assurance etc. Systems Analysts required On-Line Honeywell experiences an advantage. Ref. 1206.

A company car offered where necessary. Our client requires an Analyst familiar with Honeywell 64 series. Wide variety of applications. Ref. 1028.

Commercial background required by our client. Mostly development work on UNIVAC equipment. UNIVAC experience not essential. Ref. 1186.

RECRUITMENT CONSULTANT REQUIRED FOR THE PERMANENT DIVISION OF OUR MANCHESTER OFFICE. CONTACT JOAN JOHNSTON, 143/4 ROYAL EXCHANGE BUILDING, MANCHESTER M2. 061-833 9341/5 (24 HOURS). DATA PROCESSING RECRUITMENT SPECIALISTS

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Systems Analyst

This post reports directly to the Controller, and will suit someone with 3-5 years experience in systems analysis. Good business background and a strong personality are other requirements.

Programmer

Reporting to the EDP Manager the person appointed will have 2-5 years experience in RPG II and should have business experience.

A knowledge of the German language would be an advantage, although not essential. Long term career prospects within Germany are envisaged.

Salaries and benefits are competitive on the German market and relocation expenses will be paid.

Please reply giving comprehensive career details to: P. Bucklow, c/o Abbott GmbH, Diagnostics Division, Amperstrasse 3-5, 6070 Langen, West Germany. Or, for more information please contact Mr. Hans Berger, Tel. 01049 6103 701253.

COMPUTER ENGINEERS

FOR IN-HOUSE MAINTENANCE ACTIVITY-LONDON SW3.

Comshare are the fastest growing specialist computer services company in Europe with a timesharing network across Europe, North America and Japan.

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Applicants should have received theoretical training in Electronics - with practical applications an advantage, ideally in a computing environment.

Comshare will provide an intensive six months training scheme, following which successful persons will become members of the Engineering team which is currently involved in installing, commissioning, upgrading and maintaining our systems. Presently our typical systems consist of several large mainframe Dual Sigma 9 Central Processors with Ampex 512K 32 bit word memories, CDC and

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The starting salary is £3,500 to £4,500. Following satisfactory completion of training, the salaries will be supplemented by disturbance allowance, overtime payments, company car, BUPA, pension scheme, etc.

These jobs will fill quickly, so if you're keen to join a young and enthusiastic team, don't hesitate - telephone Graham Podd now on 01-351 4399 for details or write to Computer Engineering Manager, Comshare Limited, PO Box 197, London SW3 5RL.

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Computer Manager/ess

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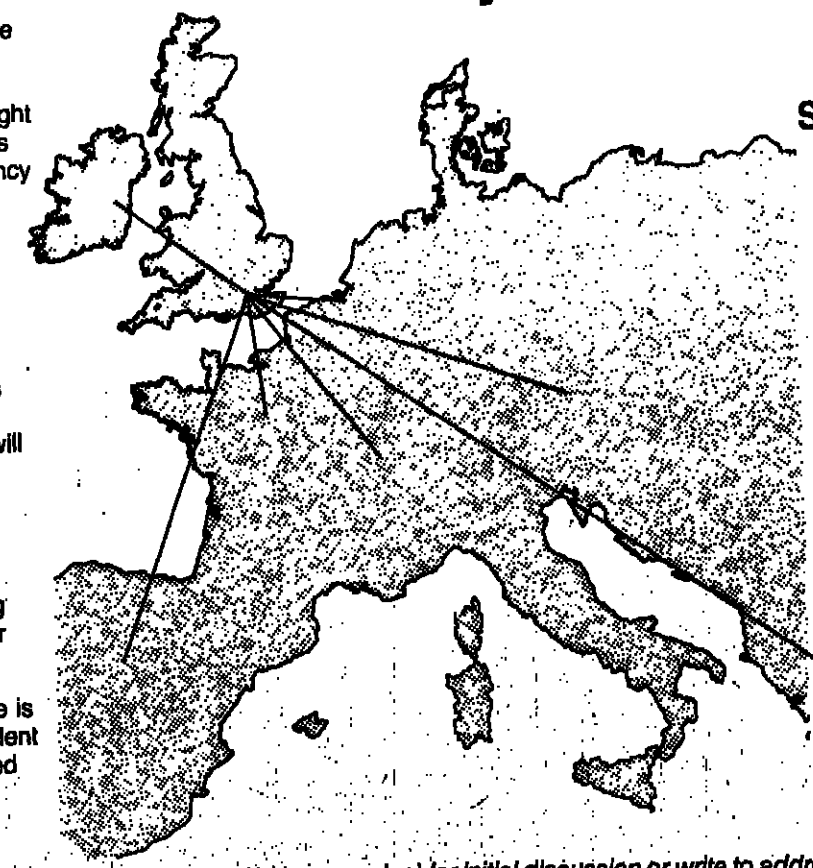


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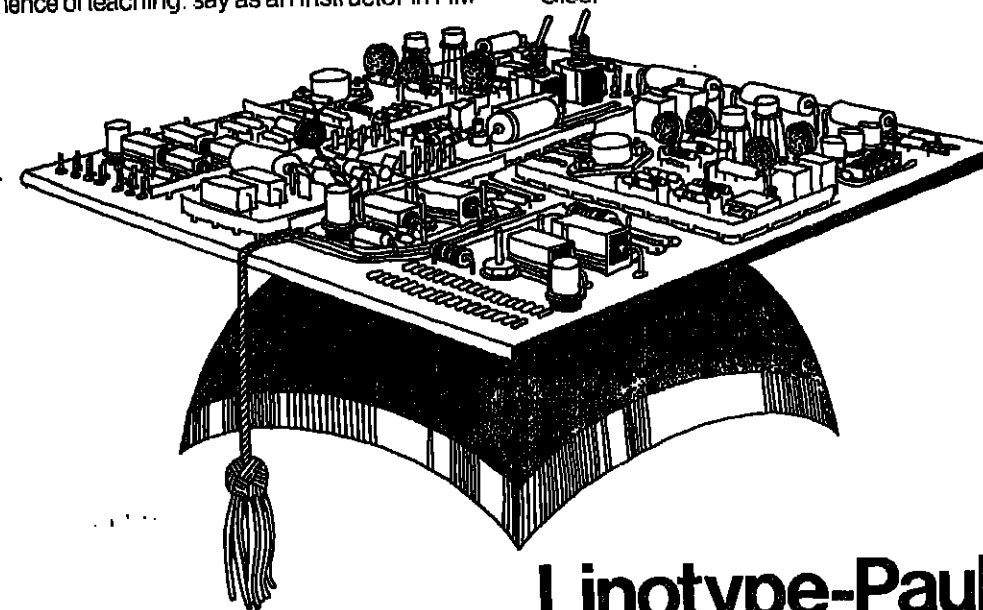
If you have had upwards of 3 years' experience of computers or modern digital electronics and are keen to share your know-how with others, then we can show you the way to a really worthwhile job, where you'll earn sound respect for your professionalism and straight talking. Ideally you'll already have had some experience of teaching, say as an Instructor in HM

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Courses cover our entire product range and involve mainly digital systems based on microprocessors, MOS devices etc. down to chip level.

We are offering an attractive salary, excellent prospects for future growth, and first class benefits, including a generous relocation package covering all major expenses.

For further information, contact Barrie Witt on 0242-41441, Linotype-Paul Limited, Cheltenham House, Bath Road, Cheltenham, Glos.



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Our client is the largest and most progressive I.C.L. based bureau in Europe. Offering a complete range of computer based services with a nationwide communications network they are growing at the rate of 50% per year.

They are currently seeking to recruit a database specialist who has the ability to provide the database expertise for internal requirements and can also act as a consultant for both customers and prospects.

As such the ideal candidate will have a good knowledge of I.D.M.S. and D.D.S. and will have used these in a commercial environment. However, consideration will also be given to those who have a thorough knowledge of database techniques gained on commercial applications and can demonstrate the flexibility to translate their knowledge to an I.C.L. environment.

If you feel you have the necessary experience for the job and would like to discuss the matter further please telephone or write quoting reference 2477, Mann Management, 124 New Bond Street, London W1. Tel: 01-409 1371.

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If you would like to be considered for this post, would you please write giving previous qualifications and experience to:

Personnel Officer, BP Nutrition (UK) Limited, Stepfield, Witham, Essex.

BP nutrition



CITY OF SHEFFIELD

City Treasury

Computer Services Division

ASSISTANT SYSTEMS AND PROGRAMMING MANAGER

PL11 - £7802 - £8348 (including supplement)

Should be suitably experienced and qualified persons for this senior post. The Computer Services Division is comprised of 103 staff, of whom 32 are attached to the Systems and Programming Section. The City Council is to replace its ICL 1904S (192K) computer by an ICL 2980 (2 Mb) in November 1979 followed by an ICL 2972 (4 Mb) in January 1981. The successful applicant will be expected to play an important part in the conversion of existing systems and the development of a comprehensive manpower information/payroll system during this period. Further development will be expected towards a data base concept for which this officer will have special responsibility.

Applications, giving details of qualifications and experience, together with the names of two referees, should be sent to the Chief Personnel Officer, Pelatine Chambers, Pinatone Street, Sheffield S1 2HN by the 31st July.

Banking

Salaries up to £11K + mortgage

The City

Systems programmers with experience of IBM machines and with one or more of the following: MVS, TSO, IMS, DB/DC, CICS, VSAM, are required by the subsidiary of a major British clearing bank. Knowledge of software applications and implementation, and performance measurements is considered essential. Salaries will be negotiable, up to £11K dependent on experience.

Lancashire

The Management services division of this Bank is seeking Systems Analysts and Programmers to join a team implementing major changes in the Bank's systems, using up-to-the-minute hardware and software techniques. Experience of COBOL, CICS, or DLI is advantageous, but the particular machine background is not considered essential, since IBM, NCR, BURROUGHS, and Word Processor hardware is all in use. Banking experience is not required as training will be given. Salaries £5K-£8.5K

Cheshire

Assembler/COBOL Programmers to join a team working on the design and implementation of an advanced integrated Database on-line banking system. ICL or UNIVAC mainframe experience preferred. Salaries £4.5-£7.5K + house purchase scheme + flexi-time.

London

The International Banking Division of a major U.S. Bank has openings for Senior Systems Analysts for development work in a newly formed, rapidly expanding London Subsidiary, and for their European network. 3-4 years experience in Analysis is required. A background including financial or banking systems development is preferable. Opportunities for overseas travel exist. Salaries £8-£9K + usual large Co. benefits.



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THE UNIVERSITY OF LEEDS
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COMPUTING ASSISTANTS AND EXPERIMENTAL OFFICER

The University Computing Service is responsible for the provision of computing facilities to all departments within the University and will take delivery of a new mainframe computer around the end of the year. To be followed by the development of a campus network supporting large numbers of terminals. Applications are invited for the following posts:

1. Computing Assistant to work on the maintenance and development of the Operating Systems software used by all machines on the network (Ref: 17/402).
2. Computing Assistant to work mainly on evaluating, implementing and supporting computing systems and related software (Ref: 18/18/42).
3. Computing Assistant who will work on the development and maintenance of applications software and data bases on the network (Ref: 19/403).
4. Experimental Officer to assist in the installation and subsequent maintenance of the University's communications network (Ref: 18/20/42).

Applicants should have a good honours degree or equivalent, preferably together with several years' relevant post graduate experience. A higher degree could be an advantage. Appointments will be made for a fixed period of three years.

Salary as an appropriate point on the scale £1356-£1385. The salary scale is effective from 1 October, 1979 and is subject to further review from that date.

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting appropriate reference number. Closing date for applications 17 August 1979.

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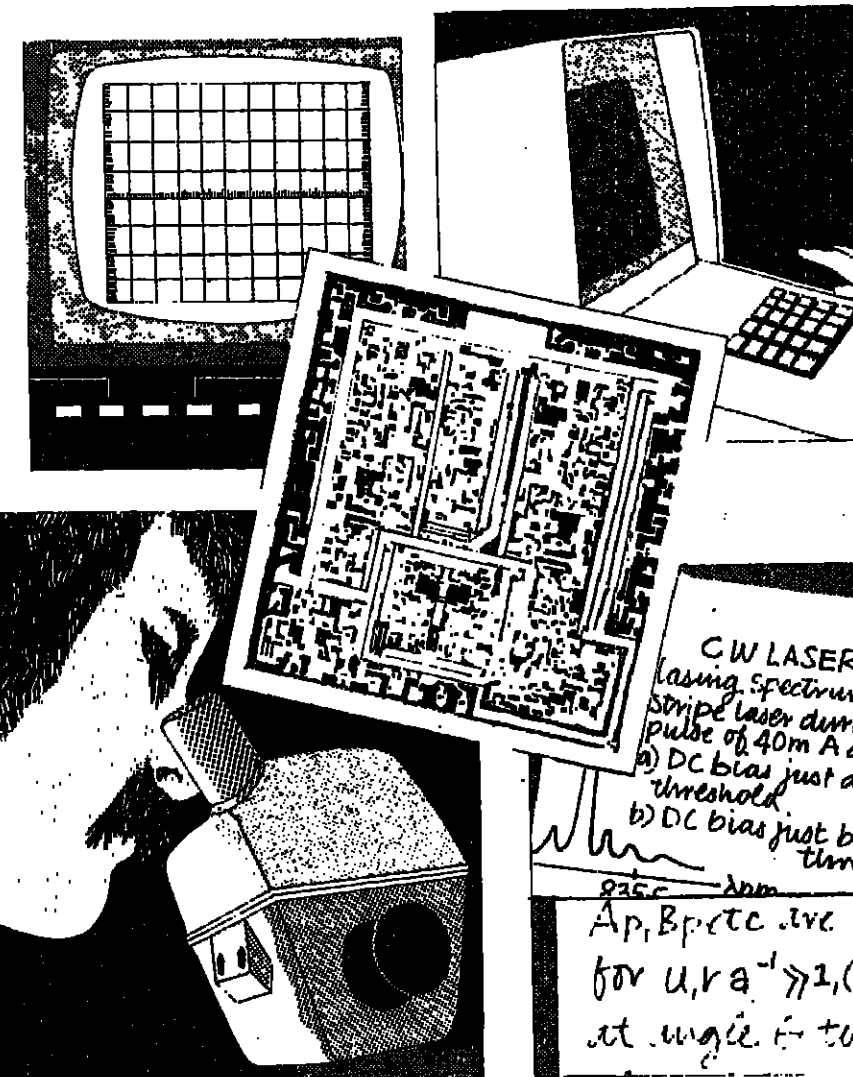
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We are situated in a very pleasant part of rural Cheshire, just 18 miles south of Manchester with easy access by road and rail. Salaries and other benefits are excellent, including relocation expenses, bonus and profit sharing schemes, as well as a very active sports and social club. We place a high emphasis on on-going technical training and development and the scope for career opportunities is extremely good - ICI has a reputation for excellence in this area.

If you would like to give your career a boost - write or telephone for an application form to:

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Department of Computer Studies and Mathematics

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Computing/Information Systems Ref: ACA/376/CW

The principal degree and diploma courses within the Department involve major studies of applications of computers in business, industry and public authorities.

Applicants should have appropriate practical experience of systems design/analysis for computer-based information systems.

A good Honours Degree and/or MBCS is essential.

Staff will be expected to undertake activities, including research, in addition to teaching duties.

Salary: SL £6051-£7065 (Bar) -£7572 per annum
(under review) LI £4101-£6558 per annum

Further details and application forms, which should be returned by 17 August, 1979, from: The Personnel Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH (Tel: 0484 22288, Ext. 2223). Please quote the relevant reference number.

RESEARCH FELLOW

(Fixed term two year contract) Ref: ACA/258B/CW

Applications are invited from graduates with relevant research experience, good honours degree and probably higher degrees, to develop the research work in the department in relation to computer-based information systems.

Salary: Research Fellow Burnham Scale (Point 0 on SL scale) £6051 (under review)

RESEARCH ASSISTANT

(Fixed term two year contract) Ref: ACA/279B/CW

Applications are invited from good honours graduates or persons with equivalent experience to undertake research on computer-based information systems. The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.

Salary: Research Assistant Burnham Scale (Point 0 on LI scale) £3192 (under review)

Further details and application forms, which should be returned by 17 August, 1979, are available from: The Dean of Research's Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH. (Tel: 0484 22288, Ext. 2057). Please quote relevant reference number.



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NATURAL ENVIRONMENT RESEARCH COUNCIL

NERC CENTRAL COMPUTING GROUP

COMPUTER SCIENTISTS

The NERC Central Computing Group has two vacancies at Higher Scientific Officer or Scientific Officer level for Computer Scientists. The successful applicants will join a staff of analysts and programmers working at the Bedford Laboratory, near Luton, Bedfordshire, to develop the use of large SR and NERC computers for environmental research.

One of the major tasks of the group is the maintenance and development of GEXE, a generalised relational data base management system developed in NERC.

POST A will involve growing expertise in the use of GEXE, and will involve in-depth knowledge of the UK and overseas. Previous experience in implementing large software systems on different computers would be an advantage.

POST B is concerned with the development of the GEXE system, particularly in areas such as graphics and other advanced and advanced to users of GEXE and other packages supported by the Group. Previous experience in GEXE or other programming would be an advantage.

For Scientific Officer appointments, candidates should have a BSc, HND or a degree in a scientific, engineering or mathematical subject. For Higher Scientific Officer appointments, candidates will require at least two years' relevant experience in addition to one of these qualifications.

Salaries: Higher Scientific Officer £2218-£2311 p.a. Scientific Officer £1289-£1386 p.a. (As at 1 August 1979). These rates will be reviewed in January 1980.

The staff of the Council are not Civil Servants but enjoy pay and conditions of service comparable to Civil Servants. Application forms may be obtained from Ken Young at NERC, Petts Wood, North East Avenue, Buxton, Tel: 0783-40111. Completed application forms should be returned by

2903

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Chief Programmer

Twin ICL 2950 —
Real Time TP Network

Northamptonshire

c.£8,500

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Substantial experience in PLAN and COBOL coupled with a demonstrable technical knowledge of ICL on-line/real time communications software are prime requisites. Practical experience in introducing and developing structured programming techniques would be advantageous.

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TO APPLY

Please send a CV, or a letter listing professional career history to date including hardware and software exposure, current employer, position and salary, or telephone for an application form, in complete confidence, to ANTHONY SPURR, Executive Selection Division, at the address below, quoting G745. Applications from either sex.

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To arrange an interview, telephone Chris Hill on 01-953 3030 ext. 3449 or alternatively write to him for an application form. Marconi Avionics Limited, Esplanade Way, Borehamwood, Herts WD6 1RX, or call 01-207 3455 any time.

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Application form and further details may be obtained from The County Treasurer, Salop County Council, Shirehall, Shrewsbury, Salop SY2 6ND, or by telephoning Mr. Hewitt on Shrewsbury (0743) 222232. Closing date 2nd August, 1979.

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Application forms and further particulars may be obtained from the Personnel Officer, Teignbridge District Council, Council Offices, Kingsleigh Road, Newton Abbot, TQ12 2QB, for completion and return by 14th August, 1979.

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TODAY
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SEE PAGE 42



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1. The salesman will only pursue that business which he truly believes will be profitable to his employer.
2. The salesman will make no commitment on behalf of his employer outside of those products, services, prices, deliveries, maintenance, supplies, etc he is formally authorised to promise.
3. The salesman will make no exaggerated claims in respect of the benefits and advantages which might be achieved by the use of the product or service being sold.
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6. The salesman will ensure
7. The salesman will not exploit the special freedom of his occupation by devoting less time and effort to his job than can reasonably be expected by his employer.
8. The salesman will diligently and promptly carry out all the clerical and information processing required by his job in accordance with the reasonable demands of his employer.
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BOOK REVIEW

Some aspects of artificial intelligence

Proc. AISB/GI Conf. Artificial Intelligence (D. Sleeman, ed), Hamburg, July 1978.

THIS volume of about 400 pages contains three invited papers each reviewing some aspect of AI, and 46 submitted papers covering a broader spectrum. About two-thirds of these are "short", being limited to seven pages. The volume is a photographic reproduction of the individual papers, and is quite legible.

The central papers deal with "vision" (Horn), representation of knowledge (McDermott) and AI programming methodology (Wiegand). All three contain extensive bibliographies. The first of them is written at a conversational level, and while this may have been an asset as a conference presentation, the paper itself suffers in comparison with the more structured approach taken in the others.

The submitted papers are of mixed quality and relevance. Some are truly excellent, including several short papers that would have benefited from a fuller treatment had space been available. There are also several (alas) that appear to fall well outside the scope or standards of the conference, and whose omission would have provided just this space.

Unlike most proceedings, the papers are arranged here alphabetically by first author. This makes it easy to find a particular paper, and so enhances its value as a reference, but the cover-to-cover reader will find himself subjected to continual abrupt changes of context.

J. R. QUINLAN
Basser Dept of Computer Science, University of Sydney, NSW.

Puzzle Answer

THE player scored double 25 (bullseye), treble 20, treble 18, treble 17, treble 16 and double 10.

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